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# EFFECTIVE ABSORPTION OF HORMONES

BY

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In the preparation of active extracts of the endocrine organs it has usually been found that very little of the active substance is contained in the gland compared with the amount which has to be injected to produce an effect in the test animal. This discrepancy is no doubt due largely to the fact that there is continuous secretion by the gland and little storage, so that the content at any given time may represent but a small fraction of a day's output. The amounts which it is necessary to administer are, however, often unnaturally high because of low efficiency resulting from the method of administration. The normal gland must be supposed to keep up a slow, steady secretion which maintains a threshold concentration in the circulation but avoids wasteful or harmful excess. The exogenous injected hormone, on the other hand, is usually absorbed rapidly and utilized, destroyed, or excreted. In these circumstances the concentration in the blood will be highest shortly after injection, and will then fall away till a sub-effective concentration is reached. In many cases there can be little doubt that this cycle occupies only a few hours, leaving the organism deficient of the hormone until the next injection. If the dose is raised so as to prolong the period during which effective amounts of the hormone are present, the wastage at the time of maximum concentration will be correspondingly greater. The effectiveness of a method of administration thus depends on the degree to which the necessary concentration in the blood can be maintained at a steady even level slightly above the threshold value. The problem of how to attain this end is one of the most important in endocrine therapy.

### Oestrogenic Substances

The influence of method of administration on effectiveness was seen early in the work on ovarian extracts when Allen and Doisy and their co-workers (1924) found that a certain amount of active substance was more effective when given as a series of small doses than it was in one large dose. As preparations became more purified and semi-aqueous solutions were prepared, the advantage of divided dosage became very clear. Laqueur and de Jongh (1929) found that less than one-thirtieth of the active substance required to give a response as one injection was effective when given as six injections over thirty-six hours. Similar results were obtained by Allan *et al.* (1928), and Marrian and Parkes (1929). These facts are, of course, of importance from the points of view of both clinical dosage and biological assay.

The problem is further complicated by the fact that the various naturally occurring oestrogens are differently affected by alteration of the method of administration. When oestrone and oestriol were first isolated from pregnancy urine no two observers agreed as to their relative activity. It was soon realized that this was due to the difference in the methods used for comparison and to the more rapid and less effective absorption of oestriol. At the first International Conference on the Standardization of Sex Hormones, held in 1932, a preparation of oestrone was established as an international standard for oestrus-producing hormones, but it was realized at the time that attempts to assay oestriol in terms of the international unit, defined as the specific activity of 0.0001 mg. of the oestrone standard, would lead to difficulties. The importance of the absorption problem was also recognized by a stipulation that, in assay work, absorption should be retarded either by the use of oily media or by multiple injections. The third of the important natural oestrogens —oestradiol—originally produced by reduction of oestrone but afterwards isolated from the ovary by Doisy, is more like oestrone in its behaviour than is oestriol; by the plumage test on brown leghorn capons it was not possible to demonstrate that it has a less prolonged action following a single injection than has oestrone. There is little doubt, however, that the activity relative to oestrone by the ordinary test on the ovariectomized rat or mouse may be influenced by the method of administration.

The necessity for multiple injections is shown to an increasing extent by oestrone, oestradiol, and oestriol, in that order. This is almost certainly due to increasing solubility in body fluids, and is in close relation to the number of hydroxyl groups present. The comparative inactivity of these compounds by mouth is probably caused by lack of absorption from the gut, since there is little evidence of destruction by the digestive enzymes. It might be expected that oestriol, the most water-soluble, would be the most active by mouth. The evidence available is concordant with this supposition (Rowe and Simond, 1936). Another method of administration, unction of an oily or fatty solution, tends to increase the duration of action of the hormone (Deanesly and Parkes, 1937), but the method is not efficient except where the responding structure is superficial and can be treated directly (as the mammary gland, comb, plumage, etc.). Even so, in the absence of detailed information, one must deplore the increasing tendency to add oestrogenic substances to face creams.

A method of obtaining optimum efficiency other than by multiple injections was demonstrated by Butenandt and Störmer (1932) when they showed that the benzoate of oestrone had a prolonged action. Oestradiol mono-

benzoate behaves in much the same way. This prolongation of action is not seen if the compound is administered intravenously (Deanesly and Parkes, 1937), and it must therefore be due primarily to the esterification having decreased the solubility of the hormone in body fluids, and having thereby increased the time taken for absorption. Frequent injection is thus no longer necessary to achieve high efficiency with oestrogenic compounds.

A large number of esters of oestrone and oestradiol have been examined in a search for greater potency. David *et al.* (1935b) found that oestradiol diacetate has a more prolonged action than the free hormone, while oestradiol dibenzoate has a very prolonged action but requires a high minimal effective dose. Working with the feminization of plumage test, I (Parkes, 1937) found that oestrone acetate, oestradiol diacetate, oestradiol monobenzoate, oestrone benzoate, oestradiol-3-benzoate-17-acetate, and oestradiol dibenzoate showed increasing duration of action. Miescher, Scholz, and Tschopp (1937) have recently shown that a series of aliphatic esters of oestrone have durations of action proportional to the length of the acid chain. The higher esters, showing very prolonged action, have a high threshold dose. Deanesly and Parkes (1937) found that, so far as the plumage test is concerned, oestrone has the most prolonged action when administered by a single intramuscular implantation of a solid crystal of the free hormone. Given so, doses of 2 to 3 mg. continued to feminize plumage for about three months, a result far beyond those obtained with even the most effective esters in solution.

This body of facts makes it clear that it is not practicable to assay an ester in terms of the free hormone, since the result will depend entirely on the comparative test methods. In view of this fact, and of the increasing use of oestrone benzoate and oestradiol monobenzoate for clinical and experimental purposes, the second International Conference on the Standardization of Sex Hormones, held in 1935, established a preparation of oestradiol benzoate as an international standard for benzoylated preparations. The unit was again defined as the specific activity contained in 0.0001 mg. of the standard, but it was expressly stated that no equivalence of biological activity with the unit of free hormone was implied. The relation between 1 I.U. (international unit of free hormone) and 1 I.B.U. (international benzoate unit), whether clinically or experimentally determined, must depend on the method of administration and the test object employed, and can have no general significance. Further, it is doubtful whether it is practicable to standardize one ester in terms of another. As the number of market preparations of oestrone and oestradiol and their esters is likely to increase, and it is obviously impracticable to set up standards for every oestrogenic compound, it is highly desirable that the recommendation of the 1935 Conference should be followed by manufacturers, and that the precise nature and amount of the substance present should be marked on each ampoule. Only thus can the clinician have adequate data upon which to base an opinion as to the relative merits for clinical use of the various compounds available.

### Male Hormones

Many of the facts described above for the oestrogenic substances apply with equal force to the various male hormone compounds. The first crystalline substance with androgenic activity was obtained from men's urine by Butenandt (1931). This had a fair activity on the capon comb but a low activity on rats, and it was noted by Freud (1933) that, in relation to the activity on capons, the capacity of urine extracts to stimulate the accessory glands of the castrated rat decreased as the extracts were purified. A similar odd phenomenon was observed in the case of testis extracts. In comparison with androsterone or urine extracts, testis extracts were highly active on rats in relation to their activity on capons. When testosterone was isolated from testes it was found, as ordinarily injected in concentrated oil solution, to be less effective on rats than had been expected. David *et al.* (1935a) showed that recombination of the pure testosterone with discarded inert fractions of the testis extract led to greatly enhanced activity of the testosterone. Subsequently Miescher and his co-workers (1936a) showed that addition of any one of a large number of fatty acids to the testosterone solution led to the same effect, while Deanesly and Parkes (1936) found that increase of the volume of oily medium led to increased effectiveness of both androsterone and testosterone. It seemed clear, therefore, that the loss of effectiveness on rats of purified urine extracts, and the unexpectedly low effectiveness of crystalline testis hormone in concentrated oil solution, were caused by too rapid absorption from the site of injection, and that absorption could be delayed and the hormone made more effective by the re-addition of discarded fractions or fatty acids, or by increasing the volume of oil used for injection. The disturbance of the ratio of activity on capons to that on rats was due to the fact that effectiveness on capons is much less influenced by the presence of inert substances than is effectiveness on rats.

By analogy with the oestrogenic substances it seemed likely that a useful advance in the technique of administration might be made by esterification of the hormone. Miescher and his co-workers (1936b) made a series of aliphatic esters which showed an increasing duration of effect with increasing length of the acid chain. They were able to choose testosterone propionate as having the optimum combination of intensity and duration of activity. This compound, as examined by Parkes (1936), was more effective when a certain dose was given as two injections over ten days than when a corresponding amount of the free hormone was given as twenty injections over ten days. Since daily injection may be highly inconvenient for the clinician, testosterone propionate would seem to be a very suitable preparation in cases where male hormone therapy is indicated. Testosterone propionate, like oestradiol benzoate, shows no prolongation of effect if administered by intraperitoneal or intravenous injection, which ensures rapid or instantaneous entry into the circulation (Deanesly and Parkes, 1937), and it is evident that, as with the oestrogenic ester, the prolonged action is due primarily to slow absorption from the site of subcutaneous injection. Significant experiments are recorded by Deanesly and Parkes, who have shown that the effectiveness of free testosterone is greatly increased when it is administered by a single subcutaneous implantation of a compressed tablet of pure dry hormone. Under these conditions free testosterone becomes as effective as the propionate in oil solution. The propionate also shows a greater duration of action when given in tablet form. Even a small tablet of testosterone is only partly absorbed by the castrated rat in the course of a ten-day experiment, though great development of the atrophic accessory organs takes place during this time. The tablet can be recovered from the subcutaneous fascia and reweighed, and the dose absorbed by the rat calculated. The residual tablet can then be used for implantation a second time. With free testosterone this process has been repeated three times with a 2-mg. tablet. With androstanediol, a highly active

reduction product of androsterone, which is very insoluble in body fluids, no fewer than thirteen successive implantations of the same set of 6-mg. tablets were made into successive sets of castrated rats for ten-day periods. The total time of each tablet in the animals was thus 130 days—about four calendar months. At the end of this time the tablets were reduced almost to nothing, but the remaining material was still physiologically active. The total weight of accessory organs produced in these experiments was incomparably greater than can be obtained by the injection of 10 mg. of the hormone in oil solution.

Tablet administration has the obvious advantage that there is no necessary fluctuation in the amount of material absorbed, such as must result from even frequent injection. Once absorption has begun it will continue week after week, or even month after month with substances of suitable solubility, declining steadily as the tablet decreases in surface area, but free from minor irregularities. There is no obvious local reaction in experimental animals following the subcutaneous implantation of tablets of oestrone, testosterone, or testosterone propionate. The evidence that neither testosterone nor oestrone is inactivated by long incubation at body temperature in the subcutaneous fascia is conclusive, and it would seem that where very prolonged effects are required a clinical trial of the technique is warranted.

### Progesterone

The effectiveness of progesterone does not seem to be so much altered by conditions of administration, though possibly this is because the rabbit, the usual test animal, seems to make more economical use of injected gonadal hormones than does the rat (Deanesly and Parkes, 1937). So far as our preliminary experiments show, tablet administration of progesterone gives no increase of response in short duration experiments as compared with daily injections, possibly because absorption is extremely slow, but it is already obvious that a very prolonged effect from a single administration could be obtained by the tablet technique. In view of the difficulty of esterifying progesterone the technique may be of practical value.

### Other Substances

Problems of absorption are not peculiar to gonadal hormones. It is well known that the effectiveness of gonadotropic extracts is raised by increasing the subdivision of the dose. Addition of a precipitant such as zinc sulphate to the solution also greatly increases effectiveness, presumably by retarding absorption (Maxwell, 1934). Unfortunately their high water solubility and their lability in contact with water at body temperature make gonadotropic preparations unsuitable for tablet administration. The observations of Bates and Riddle (1936) on the influence of route of administration on the effectiveness of prolactin, and those of Ch'en and van Dyke (1936) on increasing the action of thyrotropic extracts by the addition of merthiolate, are also relevant.

There are a number of well-known examples of the same principles applying to other hormones, notably the work leading up to the production of protamine insulin. In general it may be said of many of the hormones concerned in producing chronic effects that purification and isolation make the active substance so readily absorbed by the animal that in practical use high effectiveness can only be obtained by frequent injections or by retarding absorption in one of the ways described above.

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# OTITIS EXTERNA: "HOT-WEATHER EAR"

## AN INVESTIGATION OF 100 CASES AND A METHOD OF TREATMENT


BY

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The scope of this contribution is limited to inflammation of the external auditory meatus apparently caused by hot humid climatic conditions and associated with an infection with *B. pyocyaneus* in pure culture. At the aural clinic of the Royal Air Force Hospital, Aden, a series of 100 cases was investigated, a line of treatment evolved on a simple practical basis, and search made for a common causative factor.

### Occurrence

Infections of the external auditory meatus with *B. pyocyaneus* (*Pseudomonas pyocyanea*) among the troops in Egypt were described during the great war, and more recently have been reported from the Seychelles, Canton, Ascension, and East Africa (Hermitte, 1932), America (Greaves, 1936), and Australia (Bettington, 1934). Inflammations of the meatus are common in the troops generally,* and are often ascribed to a fungus infection. The conditions appear to be very similar and equally resistant to treatment, but as none of the cases which were bacteriologically examined in this series was found to have a fungus infection or any organism other than *B. pyocyaneus* and *Corynebacterium ceruminis diphtheriae*, no attempt is being made here to discuss any other infection.

It has not been possible to assess the incidence of the trouble in Aden. Many cases are treated as out-patients elsewhere than at the Royal Air Force Hospital, but all types seem to be affected, and it is by no means confined to the troops. A record of the monthly total of new cases was kept (see Chart), and it was noted that the majority were affected during the May–June and August–September

* This subject is dealt with in a joint discussion on the effect of aural conditions on fitness for active service, *Proc. roy. Soc. Med.*, 1937, **30**, 1523.

periods, more particularly the former. At these times—the beginning and the end of the south-west monsoon—the temperature and the relative humidity increase, and there is scarcely any appreciable "cooling off" during the night. "Prickly heat" is also very common at this

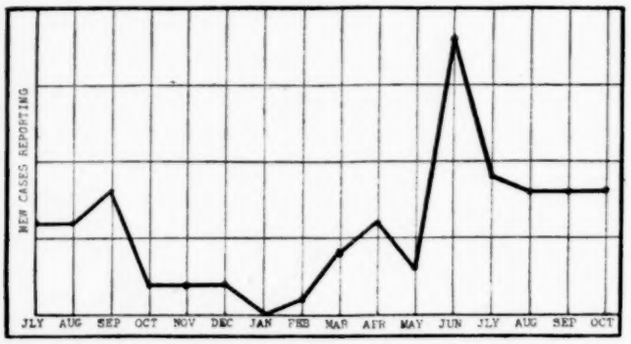


Chart showing in graphic form the new cases of otitis externa occurring monthly.

period; both conditions, however, improve under the fresher weather during July and August, and during the cool season they almost entirely disappear.

## Aetiology

It has been thought desirable to investigate two popular theories—that of causation by bathing, and that of irritation by sand or interference. Of the 100 cases only forty-six had bathed in the sea within approximately one month previous to the onset of symptoms. Of these, thirty-five were regular bathers, the remainder taking only an occasional swim. Twenty-one used wool plugs in the ears while bathing, and twelve admitted to cleaning the ears with wool wound on match-sticks after bathing. The average number of bathes per week among the regular swimmers was 2.85. Figures were unfortunately not available for the total number of bathers at various times throughout the year, but as a matter of observation it is certain that there is no marked increase during the hot periods.

There are only one or two small private bathing pools of fresh water in Aden, so practically all bathing is in the sea. While it is admitted that the number of cases is small for the purpose of forming a definite judgment, these figures appear to discredit the sea-bathing theory. Fresh-water shower-baths were taken, on an average of two a day, by ninety-five of the patients, and ordinary slipper-baths by forty. The water used for this purpose is supplied from deep artesian wells and is also used for drinking. It is analysed regularly at the Royal Air Force Laboratory, and no evidence of faecal contamination has been evinced. Only twenty-five of the patients could fairly be considered to have been more exposed than other residents to sand in Aden, where the amount is not great: one or two minor sand-storms may occur in July, August, or September. It was observed that a few individuals had served for some years in India or Iraq and had been unaffected by real sand-storms, while at a time when personnel were encamped locally in bad drift sand the incidence of the condition did not increase. None of the cases had any gross disease of the ear, nose, or throat on examination, other than the meatitis.

The origin of the organism is still in doubt. Faecal contamination has been suspected, but there is hardly any water-borne sanitation in Aden at present, and, as has been noted, there is no evidence of a contaminated water supply. It is, however, a fairly ubiquitous organism, and it appears that certain factors promote its growth and render it pathogenic. No suggestion can be given as to the reason why *B. pyocyaneus* in particular should be the infecting organism. It is believed that the chief of these factors are moisture and maceration of the epithelium, especially if devitalized by trauma. It is well known that these cases present a moist appearance clinically, and that the corollary in treatment is to keep the ear dry. Also it is shown that most cases are infected when the humidity of the climate is greatest.

As a ship surgeon, outward bound, I first met the condition in the Red Sea and to a lesser extent in the Java Sea, while cases improved in the cooler climates. This view has been confirmed by naval and ship surgeons passing through Aden, who also note that it is more common among stokers, some of whom report for treatment automatically, as the result of past experience in the tropics, when they arrive in the Red Sea. There is no evidence that all these cases are associated with *B. pyocyaneus* infection. For these reasons the term "hot-weather ear" has been maintained—a term used by Lieut.-Colonel Palmer, R.A.M.C., when he described it as a clinical entity (Palmer, 1934)—because this appears to be the strongest aetiological factor.

## Clinical Aspects

Otitis externa has been described as clinically divided into two categories—the dry and the moist. This division has not appeared to be at all satisfactory, and for the purpose of description and treatment it has been found desirable to enlarge upon it. The classification adopted here is as follows: (1) acute; (2) subacute; (3) chronic; and (4) relapsing. The first two conditions and usually also the third are "moist," whilst the fourth is "dry." There is, however, considerable overlapping between these classes.

1. *Acute.*—The patient usually complains of acute pain in the ear, often of a throbbing character, that has developed after a variable period during which he will have noticed increasing discomfort and usually some discharge from the ear. Pyrexia of 101° to 103° F. and pre- and post-auricular lymphadenitis often occur. Occasionally there is a slight degree of trismus, and mastication is painful. On examination the auricle may be slightly oedematous, and any movement of it becomes acutely painful. The meatus is occluded by swelling of the epithelial walls, which appear white and sodden, and a white curdy covering is often observed externally. The tympanum is not visible by ordinary auriscopic examination, and there is moderate diminution of hearing. If the meatus is examined under an anaesthetic the inner part is seen to be covered with sodden white epithelial debris, removal of which shows an inflamed, red, and very angry-looking meatus; but only rarely is there a definite boil to be seen. The tympanum is usually only affected to a slight degree; the normal light reflex is diminished, and the external surface is most frequently granular in appearance. Sometimes there is moderate injection in the region of the malleus, but never any bulging or pulsation. In most cases the tympanum is normal and mobile. As the condition progresses under treatment there comes a point of relief from the acute symptoms which is sometimes associated with the liberation of thin sero-purulent fluid and resolution of the acute phase temporarily. Observation and incision have failed to locate definite pus during this stage.

2. *Subacute.*—The majority of cases are first seen in this stage, and a large number can be prevented from

becoming acute. The complaint is of an aching ear, often associated with discharge from the meatus, which causes a yellow stain on the pillow-slip overnight. Slight adenitis may be present, and the auricle is tender on movement but not acutely painful. Hearing is only slightly diminished, but most distressing symptoms are caused in the hot humid atmosphere, and sleep is lost at night. Concentration at work is very difficult, and the condition may well be described as extremely aggravating. On examination the meatal walls are considerably swollen and "soggy," with plaques of white cheesy debris partly adherent and partly lying in the lumen. The tympanum can usually be seen through a narrow space and is generally normal. One very characteristic pitfall is a curtain of debris immediately lateral to the tympanum, usually incomplete, which very closely resembles a perforated tympanum with acute meningitis, the whole being bathed in purulent exudate. It is only when this has been removed that a normal tympanum is found to exist, and the differentiation of these conditions is largely a matter of familiarity with the appearances on auriscopy. For this reason the bright magnified view obtainable with an electric auriscope makes this the most useful method of examination. Removal of the sodden debris leaves excoriations which bleed very readily, and the ear then becomes more painful. Only those pieces which appear already detached can be removed without causing further trauma. There is in addition a thick purulent exudate, which lines the meatus and is very tenacious and difficult to remove efficiently. Most particularly is this true of the antero-inferior recess of the meatus immediately lateral to the tympanum. In long-standing cases this pus has been observed to assume a yellowish-green coloration with great regularity.

3. *Chronic.*—In this stage without treatment the condition in unfavourable circumstances readily relapses into the subacute phase. With treatment, however, and efficient careful removal of debris, the meatus assumes a slightly thickened red appearance, while scaly flakes of dead epithelium form on the walls. The tympanum is normal, but there is most frequently a sodden "subacute" area in the recess medial to the elevated floor of the meatus which is extremely difficult to eradicate. The chief symptom of this stage is most profound and distressing irritation, whilst the condition is aggravated by the rubbing and shaking of the auricle which this irritation provokes. There is a variable amount of discharge, which is of very thick greenish-yellow pus. Hearing is almost normal.

4. *Relapsing.*—In this stage the ear is to all intents and purposes normal both to the patient and on inspection. For a week or two after the chronic stage has been cleared after-treatment is necessary, as under very humid conditions the ear sometimes "feels wet again." If this is ignored recurrence is likely. In some cases this feeling persists during the hot season, and more acute symptoms can then be precipitated by the injudicious use of glycerinated ear-drops and wool plugs in the meatus (see below), designed to keep out irritating particles of foreign materials such as sand and dust. Cases under this heading are regarded as potential infections and are given prophylactic advice and treatment.

## Bacteriology

Meatal swabs were taken from thirteen typical cases in varying stages. The reports upon each were of Gram-negative, non-sporing, motile bacilli with no evidence of fungus. Eight produced pyocyanine on culture and gave the sugar reactions of *B. pyocyaneus*. All contained *Corynebacterium ceruminis diphtheriae*. A typical report of one of these cases in detail was:

A greenish-yellow pus, almost cheesy in consistency. Direct smears and hanging drop: numerous squamous epithelial cells. Actively motile coliform bacilli in large numbers, which were isolated in pure culture.

Characteristics of Gram-negative bacillus isolated:—Motility: + + +. Agar: Moist grey spreading growth. MacConkey: Moist grey spreading growth. Fluid MacConkey: No change. Glucose: Acid only. Lactose, saccharose, mannite, maltose, dulcite: Minute bubbles of gas with *no* acid change, using Andrade's indicator. Peptone: No indole formed in five days; filmy grey pellicle. Litmus milk: Digested in twenty-four hours; no clot formation; greenish tinge developing to an *intense blue-green* by the fifth day. Glucose broth: Brownish wrinkled pellicle, Voges-Proskauer reaction negative.

Conclusions: The organism appears to be a true *B. pyocyaneus* in which, perhaps owing to oxygenation in the external ear, pyoxanthose, a yellow pigment, is in excess of pyocyanine.

In many cases there was intense blue pigment production in most of the above media. Of the five remaining cases in which the full sugar reactions were not examined the reports were:

Actively motile, Gram-negative bacillus, giving the following reactions:—Glucose: Acid. Lactose: No change. Mannite: No change. Litmus milk: Slight acidity.

The cases which were examined were selected at random, and presented lesions typical of the condition. It has already been pointed out that the pigmentation of the pus in the later stages and the definite yellow staining of the pillow-slips due to discharge from the meatus are fairly well-marked clinical signs.

## Treatment

In standardizing treatment cases were classified into the clinical groups described, and the routine was strictly followed according to the group.

### ACUTE CASES

These cases, consisting of those with "boil" formation or obstructed meatus with excessive tenderness, were most frequently admitted into hospital, where treatment could be more intense, especially if pyrexia was present. With this group no effort was made to clean out the meatus; to attempt it is sheer brutality, as the pain is exquisite. The meatus is very gently syringed with boric lotion, as hot as the patient will tolerate. After this the meatus is allowed to drain by posture for a few minutes. The ear is next filled with warm 1 per cent. carboglycerin drops and a hot boric foment is applied, large enough to include the pre- and post-auricular glands. This treatment is carried out four-hourly, and is combined with initial purging by 4 grains of calomel in split dosage followed by salts. At first there was considerable diffidence in syringing with really hot lotion, lest vestibular disturbances should be caused. However, this does not appear to occur in these cases; most probably because the lotion does not freely reach the depths of the meatus. The relief is great and almost immediate, whilst the removal of small portions of debris makes the application of the carboglycerin more effective. The latter has been used only in 1 per cent. solution, and as such the analgesic effect has proved satisfactory when combined with the hot syringing and fomentation. The question of incision in these cases is interesting. In some earlier cases the pain was so acute that the meatus was examined under an anaesthetic. Sodium evipan was used, but no actual

boil could be found. Once or twice the most turgid and inflamed region was incised without the liberation of definite pus. Despite the relief this procedure gives it is considered that incision is contraindicated. Even if a definite boil is seen, which is unusual, it seems better to allow it to burst under the conservative treatment described; the pain is relieved speedily by both methods, and convalescence is not hastened by incision. Except for these early cases no occasion to incise the meatus has arisen during the last two years.

#### SUBACUTE CASES

These are cases in which there is partial occlusion of the meatus that is sufficiently painless to permit the introduction of instruments. In this group the object of treatment is to tide over and shorten the gap between acute occlusion and the relative patency of the chronic infection. The meatus is gently cleaned by direct application of dry sterile cotton-wool on malleable wool-carriers, under direct vision with reflected light. The electric auriscope is used only for inspection in this stage. When moderately clear of debris the meatus is packed firmly, but not tightly, with sterile half-inch ribbon gauze soaked in 1 per cent. carboglycerin, being retained in position by an external wool plug. This procedure is repeated every twenty-four hours. The steady light pressure lessens the swelling, the glycerin loosens the dead epithelium, and the carbolic acts as a mild antiseptic and analgesic. This stage as a rule lasts only two or three days and leaves a clean but inflamed meatus, while debris persists in the recess near the drumhead.

#### CHRONIC CASES

This group comprises cases in which the condition has been present for some time; those recovering from an acute attack; and those in which the meatus is patent, pus is formed, and epithelial maceration is the rule. In this stage, in which the greatest difficulty has been experienced in ensuring successful and speedy recovery, various forms of treatment were tried and the basic principles of dryness and thoroughness were soon confirmed. Both present difficulties: the dry infected meatus produced the most aggravating irritation and distress to the patient, whilst excessive zeal in removing every piece of debris caused excoriations very easily and rendered the ear sore and difficult to treat.

The routine finally adopted has been as follows. First the ear is cleared of obvious gross debris: a day or two on the treatment described for subacute cases has been found most successful for this purpose. The meatus is then dried with either ether or boric and spirit drops. After mopping with dry sterile wool the patient inclines his head right over, to bring the affected ear uppermost, and is warned to keep his eyes tightly closed. A small quantity of boro-iodine powder is tapped well into the meatus and insufflated with a Siegle's speculum into all parts of the meatus. Care is taken to avoid blowing the powder into the operator's eyes. The meatus is then quickly packed with the powder until it is full, the whole being lightly tamped home. Without delay the meatus is now plugged with a firm pledget of wool.

The dressing is left undisturbed for forty-eight hours. It causes slight discomfort for the first hour or two, but in no case has this been intolerable. At the conclusion of this period the ear is very gently syringed to clear away the remains of the powder, the greater quantity of which has usually been dissolved, and the meatus is filled with boro-spirit drops for a few moments, afterwards being drained by posture. It is sometimes necessary to detach dried pieces of dead epithelium with forceps, and occasionally small casts of the meatus are removed in this way; otherwise the use of instruments is avoided at this stage, and the meatus is not kept plugged with wool. Boro-spirit drops are applied twice daily for two days, and the treatment is repeated if it is then found necessary. As a rule only two such applications of boro-iodine powder have been indicated, although repetition has occasionally been necessary after about ten days.

Essential points are the drying of the meatus, speed in the application of the boro-iodine powder as the iodine evaporates rapidly in hot climates, and the subsequent avoidance of any form of plug in the meatus. The reason for the last-named is that the cartilaginous portion of the meatus contains sweat glands (Powell, 1934), and any plugging distal to these must cause increased humidity in the meatus and maceration of the epithelium, conditions which predispose to recurrence. With the use of only a thin film of powder it has been found that the iodine evaporates so quickly in a climate such as that of Aden that the filling of the meatus as described is regarded as essential. In no case has this caused any trouble: within a few hours the powder appears to be dissolved by the moisture of the plugged meatus.

### After-treatment

Most cases are now discharged from the clinic with a bottle of boro-spirit drops, a small quantity of which they are advised to insert into the meatus last thing at night. Patients are instructed to dry the ears carefully after bathing, especially after taking a shower-bath, by gentle shaking with a towel inserted in the auricle on the tip of the little finger and with the head inclined over on the side. The insertion of wool plugs is strongly discouraged for the reasons mentioned above, although the question of using "a plug of cotton-wool soaked in olive oil during bathing" frequently arises. Unsterile oil and dirty wool are often used, and the plug is sometimes forgotten. It is of doubtful efficiency, and is needless if the ear is carefully dried.

### Preparation of Boro-iodine Powder

The method described by Scott Stevenson was taken as a guide (Scott Stevenson, 1935) and modified to suit the climate of Aden. The following description has been prepared by the dispenser at the Royal Air Force Hospital, Aden:

"For the preparation of iodized boric powder sublimed iodine is used in a strength of 1 per cent. in acid. boric. pulv.; the iodine is first broken down with a few drops of alcohol 90 per cent. The boric acid is added in powder form in small quantities as quickly as possible, using a non-porous glass mortar and keeping the mixture moving all the time. As soon as the iodine appears to be evenly distributed the powder is transferred to a wide-mouthed dark glass-stoppered bottle, without waiting for complete drying. Evaporation of the iodine is very rapid; if any delay occurs all the iodine is lost, and the use of a glass-stoppered bottle instead of cork is necessary to preserve the iodine content."

### Other Methods of Treatment

In many papers dealing with this and allied conditions there appear a variety of treatments, a number of which have been tried here in the hope of finding one more satisfactory than the others. At first diligent mopping of

the meatus with hydrogen peroxide, then drying with ether, and applying a solution of silver nitrate in spiritus aetheris nitrosi was tried. Then spirit and biniodide of mercury, 1 in 4,000, was substituted for the ether. Argyrol (2 per cent.), mercurochrome (1 per cent.), and liquid iodex packs were given exhaustive trials, with disappointing results. Zinc ionization promised well; a course of five treatments each of 1/2 mA for one-half hour, a stronger current being uncomfortable, produced good results at first, but recurrences were numerous. Vaccine therapy was not tried, although recommended by some observers (Hermitte, 1932), because it was felt that a simpler and more practical method of treatment could be evolved which could be practised efficiently at out-stations. Phenyl mercuric nitrate (Greaves, 1936) was not used in this series.

Finally one case arose in which all efforts to obtain a cure appeared futile; the condition just continued to relapse. First one side would improve and the other commence to discharge, then the state would reverse. This man spent fifty-seven days in hospital, in addition to receiving 107 days of out-patient treatment. The organism was a typical *B. pyocyaneus*, and all the methods of treatment described were tried with no avail. In the end the meatuses were treated with boro-iodine powder on the lines now described, and after one application on each side the condition cleared up completely. He has since passed through the whole hot season without recurrence, and only occasionally applies a few boro-spirit drops at night-time. The routine treatment was then evolved and adopted, with results which have been very satisfying, although not always as spectacular as in this one case.

## Results

Since the treatment described was adopted as a routine and applied to the later sixty-six of this series of cases the average number of daily attendances has been 8.27 per case (maximum, 24; minimum, 2). Previously, under the other forms of treatment, this was considerably greater, and in the earlier thirty-four cases of this series the average was 22.6, or, excluding the exceptional case to which reference has been made, 18.1, with a maximum of 72 and a minimum of 3. Admissions to hospital have totalled five from the earlier thirty-four cases (16.6 per cent.) and three from the sixty-six later cases (4.54 per cent.)

Published results of vaccine therapy are good after periods of weekly injections extending over some five or six weeks (maximum, 12; minimum, 3). The vaccines used were autogenous, but the suggestion is made that a stock vaccine might prove equally efficacious (Hermitte, 1932).

Phenyl mercuric nitrate, used 1 in 1,250 in 95 per cent. alcohol, is claimed to have a spectacular effect on the acute stage and to shorten the course and hasten recovery in the chronic and long-standing cases (Greaves, 1936).

## Summary

1. A series of 100 cases of otitis externa occurring chiefly during the hot humid seasons of Aden was investigated, and a representative number of cases were found to be infected with *B. pyocyaneus* in pure culture.

2. The influence of sea-bathing and a sandy atmosphere as aetiological factors is discussed and discredited; whilst the seasonal incidence is held to justify the term "hot-weather ear."

3. A routine method of treatment with facility of application is described, based upon boro-iodine therapy. The use of cotton-wool plugs in the meatus is discouraged. Prophylaxis and after-treatment are described.

4. The results of this form of treatment as applied to sixty-six cases are given, and are compared as far as possible with those of some recently published methods.

I wish to acknowledge my indebtedness to Squadron Leader Lee-Potter, M.D., for having carried out the bacteriological investigations; also to the officer commanding the Royal Air Force Hospital, Aden, for his encouragement, and for permission to prepare this paper. The provision overseas of references and photostatic copies of publications by the librarian of the Royal Society of Medicine has been greatly appreciated.

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E. T. Ceder and L. Zon (*Publ. Hlth. Rep.*, Wash., November 5, 1937, p. 1580) issue a preliminary report on the treatment of psoriasis with massive doses of crystalline vitamin D and irradiated ergosterol. They point out the frequency of psoriasis, its tendency to occur in the winter, and its diminished prevalence in summer and in the Tropics. The benefit derived from ultra-violet irradiation combined with the application of coal tar is possibly due to the production of a substance similar to irradiated ergosterol. This substance may have toxic effects or produce deleterious effects in children, in rats, and in those who have a recently calcified tuberculous focus. Massive doses of vitamin D, 300,000 units daily, given for chronic arthritis, produced involution of the associated psoriasis. Fifteen established cases of psoriasis were treated with similar doses of vitamin D in sesame oil, given after meals by the mouth. Two brands were used: one produced involution in ten out of twelve and the other one out of three cases in six to twelve weeks. No other treatment was given. All the patients but one developed a progressive hypercalcaemia. Six out of ten in one group gradually relapsed in one and a half to five months. The benefit given may be due to any of the components of irradiated ergosterol, and if it is to be continued necessitates a small maintenance dose.

# HYPERVENTILATION ATTACKS

## A MANIFESTATION IN HYSTERIA

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It is well known that overbreathing brings about tetany in certain susceptible subjects. Other somatic and psychological effects also result from hyperventilation, but these are apt to escape recognition in clinical practice. At the Maudsley Hospital and out-patient clinics during the last eighteen months over twenty patients were seen who had fits and fainting attacks with hyperventilation as a central feature. Since tetanoid spasms were not always present the part played by overbreathing in the production of the fits had generally been unrecognized.

### Mechanism of the Condition

There have been many studies of spontaneous hyperventilation tetany (Goldman, 1922; McCance, 1932; Cumings and Carmichael, 1937; Fraser, 1937; and others). In most cases no pathology has been discovered for the condition, but it has sometimes been found in association with encephalitis lethargica (Barker, 1922; Harrop, 1923) and spontaneous hypoglycaemia (Wilder, 1934). It has also been reported by Goldman (1922) as occurring with pain, nausea, acute infections, and excitement. Changes of mood appear to play a part in certain susceptible individuals. Guttmann (1927), discussing the occurrence of tetany in hysterical subjects, thinks that it is a preformed mechanism released by overbreathing following or accompanying "Angst," since both of these features are generally seen to precede an attack. Notkin (1930), considering the causation of fits diagnosed as hystero-epilepsy and affect-epilepsy, concludes that one of the mechanisms in the production of the convulsive state is the overbreathing that occurs in these psychopathic individuals under emotional stress and appears to lead up to the fit. It is probable that at least some of his cases are severe manifestations of the type of attack we are about to describe, though we have included none in our series that had true epileptic fits.

Some of our patients' "fits" were typical of those usually described as spontaneous hyperventilation tetany, but many had been diagnosed as fainting or hysterical attacks of varying degrees of severity and did not show tetanic spasms. In all cases, however, hyperventilation occurred throughout the attack, and closer examination revealed other features in common, such as the previous personality and constitution of the patient, and the mode of onset and cessation of the attack. The varying types of attack could also be stopped artificially in the same way. Ample evidence was present for grouping them together and postulating a common mechanism, since the only real difference lay in the severity of the attack, the degree of loss of consciousness, and the varying nature of the motor phenomena met with in individual patients.

The main biochemical change so far demonstrated during the hyperventilation attacks has been a gaseous alkalosis resulting from the overbreathing (Collip and Backus, 1920; Fraser, 1937). The blood calcium alters little, with a slight tendency to rise (Popoviciu *et al.*, 1933; Scott and Cantor, 1933). As yet we are ignorant of the actual mechanisms responsible for the spontaneous onset of the overbreathing and the increased susceptibility to its effects shown by these patients. These problems are still being investigated.

Practically all our patients were found to have the hysterical personality, so far as this can be clearly defined. They were generally suggestible and emotionally unstable people who easily became apprehensive. They depended on the sympathy and help of others, and showed little persistence in the face of difficulty. Certain constitutional peculiarities were also found in most of them, such as a tendency to brisk reflexes and autonomic irritability. Nearly all were females between the ages of 15 and 30, but one was aged 45. Only two were males.

The attacks were sometimes the sole complaint of the patient, but usually only one of many symptoms in a psychological illness. In a few cases they had been present for many years and occurred regularly with emotional excitement, but generally they were seen only during the acute stage of a depressive or hysterical illness, and disappeared with recovery. The history of the initial attack often revealed that its onset coincided with some particularly severe emotional disturbance. Following the first one, attacks tended to recur whenever the patient's emotions were again aroused. After several fits the susceptibility to them often increased, and some subjects could apparently induce them at will. One man, for instance, had had his first attack in a war hospital, where he had been admitted with the symptoms of bronchitis. A hyperventilation fit occurred one day when he was keeping up the pretence of bronchitis by frequent and exaggerated bouts of coughing. During the last twenty years this mechanism has been so often used by him that it has now become an automatic response to stress of any sort; and though he was able to reduce the frequency of the fits considerably while under treatment he has never entirely got rid of them.

### Description of Attacks

Though occurring more readily while under observation of others, they may happen at any time of the day or night. The initial features are very characteristic, and include vague anxiety features such as sinking feelings in the stomach, palpitations, generalized flushings, and trembling. These are followed by a tightness in the chest, by feelings of suffocation and the need for more air, and sometimes by "cardiac" pain. At this stage the patients can generally arrest the attack by not "letting themselves go," but when this stage has passed the attack progresses to its completion unless arrested by an observer. Overbreathing starts when the feeling of suffocation is experienced, and other phenomena then follow in rapid succession. The attacks have three further features after this initial stage which precipitates hyperventilation: (1) interference with consciousness, of differing degree; (2) tingling in the extremities; (3) various types of motor phenomena. In the mildest forms there may be merely some tingling and numbness in the extremities accompanied by mild giddiness. In the severer forms there is a feeling of being "far away," or actual loss of consciousness, and the patients collapse on the floor and lie unresponsive to the usual painful stimuli. In our cases the corneal and light reflexes and control of the sphincters were retained and plantar responses were normal, though the conjunctival reflexes were sometimes lost. The motor phenomena seen are variable: some patients lie limp, but others wave their arms and struggle restlessly; only in some of the more severe cases do periods of tonic opisthotonos occur at the height of the motor restlessness,

and the tongue may then be bitten, and frothing at the mouth sometimes occurs. In the moderately severe cases tetanic spasms may appear in the extremities, but by no means always, and temporary hysterical paralyses are occasionally seen. Throughout the whole of the attack, whatever the severity, rapid and sometimes stertorous respiration continues and eventually subsides spontaneously; the fit then ceases. If left alone the patient remains drowsy and may suffer from headache for some hours afterwards. Sometimes a succession of fits will continue for two to three hours on end, always accompanied throughout by hyperventilation, which increases before each fit. Though attacks subside with a spontaneous reduction of the rate and depth of breathing, they can also be stopped artificially in one of three ways: (1) by closing the patient's nose and mouth and so controlling the rate of respiration; (2) by putting on a rebreather bag; (3) by intravenous injections of calcium chloride, 10 c.cm. of a 5 per cent. solution. Injections of saline given on several occasions to exclude suggestive effects of intravenous therapy were found to be ineffective in stopping a fit.

All these phenomena can generally be reproduced by a short period of voluntary hyperventilation, after which the respiration will suddenly jump into its own tempo and the other accompaniments of the attack follow automatically, as in the spontaneous ones. Though the severity of these induced attacks is rarely as great as with those coming on spontaneously, the two forms are similar in all respects.

## Illustrative Cases

The following cases illustrate varying degrees of severity in the type of attack described above.

### CASE I

This patient, a girl aged 18, had had hysterical "fits" for the past four months. She was described as being nervous and highly strung as a child, and for many years had been subject to fits of temper and unable to travel much alone. She always had to be taken to and from her work, where her record was unsatisfactory, with frequent illnesses and changes of occupation. The first fit occurred at work, when she collapsed into a semi-conscious state for about an hour; the fits recurred frequently from then on till the time of admission—a succession of attacks sometimes, lasting up to five hours. On admission she had a fit in the waiting-room and again soon after her arrival in the ward. There were further attacks in the presence of new doctors or when she was upset by ward routine. The attacks were described by her as commencing with a feeling of suffocation in the chest and tight feelings in the body; overbreathing then commenced, and the fit would start about sixty seconds later. She lapsed into a semi-conscious state with stertorous respiration, and lay tossing about on the bed without actual tetany of the hands. The fits would continue for an hour or more if she was left undisturbed, but they could always be stopped by an observer—by regulating the respiration or by injecting calcium. Fits of less severity, without loss of consciousness, could be induced by making her overbreathe for two minutes or more. Severe attacks followed the injection of adrenaline, which produced anxiety feelings: tetany would sometimes occur in these adrenaline-induced attacks. The fits gradually became less frequent, following explanation of the mechanism and the immediate stoppage of each fit as soon as it began. The patient was finally discharged—having been free of them for three weeks—to attend the out-patient department, and has not had any symptoms for two months. The ultimate prognosis was not considered good, as the patient had a bad previous personality and denied all overbreathing; it was considered probable that she would use this mechanism again when in difficulties.

### CASE II

This patient, an unmarried woman aged 28, was admitted complaining of severe loss of weight and energy, vomiting, paraplegia, headache, irritability, frequent crying, and "fits." A diagnosis of hysteria was made. The history showed that she had always been shy and apprehensive, and the "delicate" spoilt child of the family. At 19 she won a scholarship to an art school, where she spent seven years and led a rather "wild" life, as opposed to her strict religious upbringing. This finally culminated in an entanglement with a married man.

The fits began soon after she went to the art school, occurring in difficult situations. In these she felt a tightness in the chest with a feeling of suffocation, which was followed by overbreathing. Her legs then "gave way" and she collapsed, with tingling, numbness, and tightness in the hands and feet, and giddiness. These attacks became more severe following the affair with the married man. A year before admission she lost control of her legs after a particularly severe fit and developed the other hysterical symptoms shown on admission. It was observed that the fits could be induced after three minutes' overbreathing and stopped by the usual methods. After explanation the patient found that she could prevent threatened attacks by inhibiting the overbreathing. After six months' treatment in the hospital she was discharged to satisfactory and interesting work, and has been free of all symptoms for nine months.

### CASE III

A man aged 39 was admitted complaining of "fits" on and off for twenty years, during most of which time he had been in employment. The first fit occurred in a war hospital during a bout of coughing induced to maintain a pretence of bronchitis. Since then they had occurred off and on when he was run down. The fits commenced with cramp in the right abdomen associated with a feeling of suffocation. Overbreathing then followed, and soon resulted in a bursting feeling in the head and numbness in the body, and in fainting. At this stage he was convulsed with violent struggling movements which often took three nurses to control, and he was unresponsive to painful stimuli. Tetanic spasm of the hands and feet was not present. The fits usually lasted half an hour to an hour, but could be readily stopped at any stage by applying a rebreather bag. For three to four hours after a fit he was listless and suffered from a headache. During a short spell of in-patient treatment he was able to reduce the frequency of his fits considerably, but could not completely overcome this long-ingrained emotional reaction.

## Diagnosis

Before the attack is actually observed the diagnosis is suggested by obtaining the history of the characteristic premonitory symptoms of tightness in the chest with feelings of suffocation, tingling in the extremities, and giddiness or other forms of disturbed consciousness. Many will deny that they hyperventilate during an attack, but when the overbreathing is actually seen the diagnosis is more obvious, and is finally confirmed by the cessation of the attack when the observer controls the patient's breathing or gives an intravenous injection of calcium. It is also usually possible to reproduce the phenomena by asking the patient to overbreathe voluntarily for several minutes, but some of them do not co-operate readily in this experiment.

True epilepsy can be distinguished by the general features of the fit, especially by the usual absence of the premonitory symptoms described above, the loss of the corneal reflex, the voiding of urine, the frequent occurrence of cyanosis, and the rarity of overbreathing throughout the fit. Hyperventilation fits must also be distinguished from other types of hysterical fit where an

audience is necessary and the manifestations of the attack are mainly an emotional display without overbreathing, which can be stopped by the patient at will.

### Treatment

While the emergency treatment of the isolated attack is entirely along physical lines—restriction of the overbreathing by an outsider or the injection of calcium intravenously—nevertheless the prevention of further attacks almost always calls for the psychological adjustment of the patient. Also following an explanation of the mechanism, some patients can be persuaded to arrest the attack in the early stages by a conscious control of respiration. Others, however, deny that they consciously overbreathe or can control their respiration when they become over-anxious. Especially in those who have difficulty in arresting the attacks once the premonitory symptoms of anxiety have occurred, benefit frequently results from investigating the causes of their emotional upset: discussion of their maladjustments and steps taken to alter disturbing factors in their environment often bring about a rapid cessation of the attacks. We failed to persuade a few patients who were deliberately inducing fits to give up this useful refuge from their difficulties.

The giving of calcium, alkalis, or acids by the mouth did not diminish the rapid spontaneous onset of the attack. But the biochemical approach to treatment merits further investigation and offers an interesting subject for future research.

### Conclusion

Our study of the above cases has suggested that many hysterical fainting attacks and fits have hyperventilation as a central mechanism. A wide variation is possible in the clinical features of the hyperventilation attacks in different patients, but they appear to fall within one syndrome. The individual variations seem to depend on the severity of the hyperventilation, the degree of autonomic dysfunction, and constitutional tendencies, both metabolic and neurological. Many problems remain as yet unsolved concerning the mechanism of this type of attack, but it is an interesting example of the way physiological abnormalities play a part in the production of apparently hysterical symptoms.

### Summary

1. Over twenty cases have been collected in which fainting attacks or fits with hyperventilation were a central feature.

2. The attacks were generally precipitated by emotional disturbance in patients who showed personality and constitutional features suggesting hysteria.

3. The varying features of the attack are described.

4. Diagnosis and treatment are briefly discussed.

Our thanks are due to Professor Edward Mapother for permission to publish these cases.

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# INSULIN–TANNIC ACID–ZINC SUSPENSION IN TREATMENT OF DIABETES MELLITUS

BY

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Much interest has been aroused during the last few years by the introduction into clinical practice of new preparations of insulin, such as protamine insulin ("insulin retard"), protamine insulin (with zinc) suspension, and zinc crystalline insulin. In use these preparations possess the characteristic features of delayed onset in action and prolongation of their maximum effect for several hours beyond that of ordinary insulin, phenomena which have been studied experimentally and clinically by previous workers (Bennett *et al.*, 1937). Suspensions of protamine insulin (with zinc) begin acting in nine to eleven hours, and achieve their maximum effect in fifteen to twenty hours. The value of these new insulins in the treatment of diabetes mellitus is now generally accepted, and has stimulated interest in the clinical potentialities of combinations of insulin with other organic substances and metallic salts. Among the substances studied in this connexion may be mentioned ferrous chloride, magnesium and other allied metals, lipoids, and—of special interest—tannic acid (Bischoff and Maxwell, 1935). The influence of tannic acid on the physiological action of insulin was first demonstrated by Bischoff (1936) during an investigation upon the precipitation of insulin by tannic acid. Insulin in combination with varying proportions of tannic acid, when injected parenterally into rabbits, produced delayed absorption of the insulin with a prolonged hypoglycaemic effect. Gray (1936) consequently gave to diabetic patients hypodermic injections of insulin–tannic acid mixtures (made immediately before use), and noted a delayed but prolonged action of insulin. He also observed that in certain patients erythema and subcutaneous swellings developed at the site of the injections. He did not, however, consider that the skin reactions were a significant drawback to the use of such mixtures. The action of the tannic acid–insulin in animals was further studied in this country by Bavin and Broom (1937), who confirmed the findings of Bischoff and further demonstrated that the properties of the mixtures were enhanced by the addition of zinc (*Lancet*, 1937, **2**, 390).

It is the purpose of this communication to report upon a clinical trial of the Bavin and Broom preparation, with reference to the changes produced in the blood-sugar levels and the local results of subcutaneous injections.

### The Effect on Blood-sugar Levels

The blood-sugar levels of nine selected diabetic patients were examined during three periods, in which the patients received exactly the same diet, given at the same times, but with hypodermic injections of different types of insulin. The first test was carried out after injection of ordinary insulin. This was followed by observations after injections of protamine insulin–zinc. Finally the routine was repeated after a dose of insulin–tannic acid–zinc. The latter was a stable light-brown suspension containing the insulin, tannic acid, and zinc already mixed,

and was made up in rubber-capped bottles in sterile form, its strength being 40 units per c.cm. The stability of the mixture was such that its strength remained undiminished for several weeks at room temperature. The mixture consisted of insulin and tannic acid in the proportion of 1 to 2, with the addition of zinc, 1 gramme to 500 units of insulin.

The nine diabetic patients were stabilized on diet with twice-daily doses of ordinary insulin before the start of the investigation. The diets consisted of four meals a day, timed as follows: breakfast, 7.30 a.m.; dinner, 12.15 p.m.; tea, 4.30 p.m.; supper, 7.30 p.m.

*Doses of the insulins* were given as follows:

1st day of test: ordinary insulin at 7 a.m. and 4 p.m.
2nd day: protamine insulin-zinc at 7 a.m. only.
3rd day: no insulin at 7 a.m., but ordinary insulin at 4 p.m.
4th day: insulin–tannic acid–zinc at 7 a.m. only
5th day: no insulin at 7 a.m.; ordinary insulin at 4 p.m., and resumption of usual routine.

The dose of insulin–tannic acid zinc was the same as the dose of protamine insulin-zinc.

*Blood sugars* were estimated by the Folin and Wu method and were examined as follows:

1st day (ordinary insulin): hourly from 7 a.m. until 6 p.m.
2nd day (protamine insulin–zinc): hourly from 7 a.m. until 6 p.m.
3rd day: at 7 a.m. and 8 a.m. only.
4th day (insulin–tannic acid–zinc): hourly from 7 a.m. until 6 p.m.
5th day: at 7 a.m. and 8 a.m. only.

Case 9 was examined hourly on the second and fourth days from 7 a.m. until 9 p.m. The routine of the third, fourth, and fifth days was repeated in Case 8 on a second occasion, so as to obtain blood-sugar readings from 6 p.m. until 9 p.m.

On the third and fifth days no insulin was given at 7 a.m., so as to examine the action of the previous dose, twenty-four hours after its injection. The conditions of experiment for the second and fourth days were made the same by giving the injection of ordinary insulin at 4 p.m. on the previous day in both cases.

The results are set out in Table I. Those for Case 9 are illustrated graphically in the chart, which is character-

TABLE I

| | Injection | | Blood Sugar (mg. per 100 c.cm.) | | | | | | | | | | | | | | | | | Diet |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Hours after Injection | | | | | | | | | | | | | | | | | |
| | Preparation used | Units (single) | B ↓ | | | | | | D ↓ | | | | T ↓ | | | S ↓ | | | B ↓ | |
| | | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 24 | 25 | |
| Case 1 | I | 40 / 35* | 157 | 176 | 230 | 223 | 148 | 85 | 136 | 223 | 167 | 151* | 204 | 223 | — | — | — | 200 | — | 2,109 Calories |
| | P-I-Z | 40 | 200 | 334 | 400 | 378 | 308 | 223 | 263 | 286 | 250 | 149 | 370 | 400 | — | — | — | — | — | C 264 P 85 F 73 |
| | I-T-Z | 40 | 185 | 308 | 333 | 278 | 200 | 185 | 227 | 243 | 192 | 166 | 294 | 322 | — | — | — | — | — | |
| Case 2 | I | 25 / 20* | 193 | 167 | 150 | 139 | 111 | 123 | 170 | 185 | 161 | 173* | 158 | 145 | — | — | — | — | — | 1,060 Calories |
| | P-I-Z | 28 | 187 | 250 | 274 | 188 | 159 | 117 | 109 | 100 | 98 | 119 | 200 | 100 | — | — | — | — | — | C 107 P 56 F 46 |
| | I-T-Z | 28 | — | 100 | 244 | 196 | 182 | — | 166 | 166 | 133 | 139 | 148 | 159 | — | — | — | — | — | |
| Case 3 | I | 30 / 20* | 286 | 351 | 267 | 182 | 110 | 61 | 119 | 136 | 143 | 147* | 193 | 143 | — | — | — | 384 | — | 1,329 Calories |
| | P-I-Z | 30 | 384 | 416 | 435 | 425 | 344 | 314 | 324 | — | 267 | 286 | 334 | 400 | — | — | — | 91 | — | C 154 P 60 F 55 |
| | I-T-Z | 30 | 91 | 260 | 267 | 210 | 172 | 122 | 210 | 206 | 200 | 197 | 270 | 333 | — | — | — | 154 | — | |
| Case 4 | I | 20 / 20* | 286 | 324 | 290 | 178 | 131 | 100 | 108 | 155 | 178 | 232* | 267 | 196 | — | — | — | 278 | — | 1,981 Calories |
| | P-I-Z | 20 | 278 | 344 | 358 | 344 | 290 | 238 | 215 | — | 196 | 178 | 236 | 278 | — | — | — | 80 | — | C 63½ P 100 F 148½ |
| | I-T-Z | 20 | 80 | 161 | 244 | 208 | 162 | 119 | 109 | 105 | 75 | 70 | 200 | 195 | — | — | — | 366 | — | |
| Case 5 | I | 15 / 12* | 95 | 134 | 143 | 90 | 56 | 60 | 134 | 146 | 135 | 106* | 91 | 120 | — | — | — | 106 | — | 1,329 Calories |
| | P-I-Z | 16 | 106 | 164 | 162 | 133 | 125 | 130 | 126 | 96 | 93 | 86 | 125 | 149 | — | — | — | 70 | — | C 154 P 60 F 55 |
| | I-T-Z | 16 | 70 | 84 | 133 | 62 | 57 | 60 | 120 | 87 | 95 | 95 | 202 | 250 | — | — | — | — | — | |
| Case 6 | I | 50 / 45* | 133 | 125 | 123 | — | 75 | 62 | 80 | 86 | 100 | 90* | 91 | 105 | — | — | — | 122 | — | 1,329 Calories |
| | P-I-Z | 50 | 122 | 166 | 270 | 264 | 222 | 238 | 204 | 244 | 208 | 190 | 213 | 208 | — | — | — | 185 | 215 | C 154 P 60 F 55 |
| | I-T-Z | 50 | 217 | 250 | 270 | 238 | 250 | 227 | 200 | 174 | 168 | 143 | 126 | 169 | — | — | — | 124 | 222 | |
| Case 7 | I | 20 / 10* | 116 | 103 | 46 | 45 | 75 | 80 | 200 | 170 | 161 | 144* | 230 | 235 | — | — | — | 166 | — | 1,329 Calories |
| | P-I-Z | 20 | 166 | 212 | 294 | 182 | 123 | 72 | 137 | 135 | 124 | 122 | 250 | 260 | — | — | — | 166 | 334 | C 154 P 60 F 55 |
| | I-T-Z | 20 | 100 | 233 | 263 | 222 | 143 | 106 | 162 | 125 | 113 | 93 | 166 | 267 | — | — | — | 125 | 232 | |
| Case 8: (October, 1937) | I | 20 / 10* | 286 | 313 | 313 | — | 228 | 156 | 147 | 164 | 182 | 185* | 238 | 257 | — | — | — | 286 | — | 1,329 Calories |
| | P-I-Z | 20 | 286 | 313 | 400 | 313 | 236 | 250 | 250 | 323 | 340 | 308 | 300 | 400 | — | — | — | 250 | 313 | C 154 P 60 F 55 |
| | I-T-Z | 20 | 328 | 400 | 408 | 364 | 303 | 282 | 290 | 313 | 244 | 244 | 274 | 313 | — | — | — | 303 | 351 | |
| (November, 1937) | P-I-Z | 20 | 274 | — | — | — | — | — | — | — | — | — | 274 | 317 | 286 | 270 | 317 | 256 | 318 | |
| | I-T-Z | 20 | 312 | — | — | — | — | — | — | — | — | — | 143 | 215 | 215 | 213 | 232 | 263 | 333 | |
| Case 9 | I | 30 / 25* | 143 | 180 | 253 | 206 | 166 | 133 | 200 | 267 | 267 | 282* | 308 | 240 | — | — | — | 182 | — | 854 Calories |
| | P-I-Z | 40 | 182 | 267 | 364 | 285 | 244 | 247 | 250 | 299 | 263 | 294 | 351 | 303 | 260 | 223 | 238 | 157 | 208 | C 112 P 55 F 26 |
| | I-T-Z | 40 | 137 | 244 | 295 | 250 | 233 | 238 | 266 | 286 | 250 | 238 | 270 | 263 | 217 | 194 | 270 | 150 | 240 | |

* Second injection of ordinary insulin.

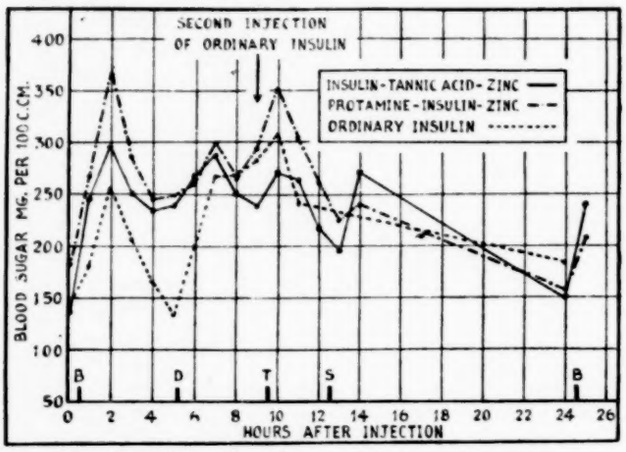
I = Ordinary Insulin
P-I-Z = Protamine Insulin–Zinc
I-T-Z = Insulin–Tannic Acid–Zinc

B = Breakfast
D = Dinner
T = Tea
S = Supper

C = Carbohydrate (grammes)
P = Protein (grammes)
F = Fat (grammes)

stic of all the curves obtained. The effect of insulin–tannic acid zinc is shown in the table and chart to be

*Chart showing blood-sugar curves from Case 9; comparing the effects of a single morning injection of insulin–tannic acid–zinc and protamine insulin–zinc with a morning and afternoon injection of ordinary insulin.*




B = breakfast. D = dinner. T = tea. S = supper.

similar to that of protamine insulin–zinc in that the single morning dose influences the blood-sugar level throughout the day as effectively as the two doses of ordinary insulin (morning and afternoon). The delay in onset of the hypoglycaemic effect of both protamine and tannic acid mixtures is illustrated, and after twenty-four hours the blood-sugar level remains low. In comparison with the blood-sugar levels obtained after protamine insulin–zinc, those with tannic acid–zinc are on the whole lower and show definitely less fluctuation from the mean. Thus insulin–tannic acid–zinc can effectively replace protamine insulin–zinc in the treatment of diabetic patients. No hypoglycaemic reactions were observed with any of the insulins used.

## Skin Reactions

The local effect of hypodermic injection of the insulin–tannic acid–zinc preparation was tried in forty-five patients, including the nine diabetics. After subcutaneous injection of a small dose (10 single units) the site of injection was examined at intervals of a quarter to half an hour, one and a half to two hours, twenty-four and forty-eight hours afterwards. The results are shown in Table II.

TABLE II

| Skin Reactions | Time of Onset of Reaction after Injection | | | |
|---|---|---|---|---|
| | ¼-½ hour | 1½-2 hours | 24 hours | 48 hours |
| Diabetics : Positive .. .. | 1 | 2 | 3 | 1 |
| Negative .. .. | 8 | 7 | 6 | 8 |
| Non-diabetics : Positive .. .. | 13 | 16 | 33 | 13 |
| Negative .. .. | 23 | 20 | 3 | 23 |
| Total Reactions : Positive .. .. | 14 | 18 | 36 | 14 |
| Negative .. .. | 31 | 27 | 9 | 31 |

"Positive reactions" include erythema, subcutaneous swelling, soreness, and stinging.

The reactions noted were erythema (red wheals from 1 to 4 cm. in diameter), hard tender swellings, stinging and soreness on moving the arm. Thus while soon after injection only fourteen out of forty-five patients showed any local reaction, after twenty-four hours thirty-six out of forty-five gave evidence of skin irritation. Many stated that they first felt and noticed a reaction about six to eight hours after injection; others experienced the first effects even later (about eighteen to twenty hours after). A further series of hypodermic injections were made with another batch of the preparation on eleven patients, with exactly similar results. One patient was given insulin–tannic acid–zinc daily for about three weeks and showed no such skin reaction and made no complaint throughout the whole of this period.

## Conclusion

The delayed but prolonged action of insulin–tannic acid–zinc renders its potential utility in the treatment of diabetic patients comparable to that of the protamine insulin. Thus insulin–tannic acid–zinc may be used successfully in place of protamine preparations in patients who show no cutaneous reactions. Tannic acid is cheap and readily available; thus the cost of the preparation should compare favourably with that of the protamine insulins, which are considerably more costly than ordinary insulin. An objection to the general introduction of insulin–tannic acid–zinc in the proportions used in the present investigation is, however, the occurrence of skin reactions in some patients. In practice it thus becomes essential to give a trial injection to ascertain the sensitivity of the patient before embarking on a course of treatment with the insulin–tannic acid–zinc. Further work on the desirability of altering the composition of the suspension used in the present trials would seem worth while with a view to finding formulae for mixtures less apt to irritate the skin.

## Summary

The blood-sugar levels of stabilized diabetic patients were examined after hypodermic injection of insulin–tannic acid–zinc suspension and compared with the levels following the use of protamine insulin–zinc suspensions and ordinary insulin respectively.

A delayed but prolonged hypoglycaemic effect was observed, the potential clinical application of which, however, is offset by its liability to produce irritant skin reactions in some patients.

We are indebted to Mr. W. A. Broom of Boots Pure Drug Co. Ltd. for supplies of the insulin–tannic acid–zinc suspension, and to Professor E. J. Wayne, University of Sheffield, for the interest he has taken in this investigation. Our thanks are also due to Dr. J. Clark, medical superintendent of the City General Hospital, for his permission to use the clinical records.

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W. Van Der Horst (*Nederl. Tijdschr. Geneesk.*, December 18, 1937) records the case of a man, aged 72, who had suffered from prostatic trouble with occasional acute retention for two years. The patient was in a very debilitated state, and refused operation. As no improvement took place after the administration of urinary antiseptics, a catheter was tied in for twenty days, and a male hormone preparation in the form of "neohombreol" in doses of 3 mg. daily was injected. After fourteen injections the catheter was removed, and after ten more injections micturition became normal and painless and general improvement took place. The prostate, though still enlarged, had shrunk to half the size it had been a month previously.

# TREATMENT OF FRACTURES OF THE PATELLA BY EXCISION

BY

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The treatment of fractures of the patella has been the subject of experiment for many years. None of the methods previously advocated has been so radical or so contrary to accepted principles as that recently described by Brooke (1937)—namely, removal of the broken bone. It is my intention to comment further on this recent operation and to add some cases to the dozen recorded by Brooke in his original article. No doubt since the publication of that article, with a commentary by Mr. Hey Groves in the same number of the *British Journal of Surgery*, other cases have been operated upon on the same lines. I cannot, however, trace any further references or articles on the subject since that time (Tippett, 1937).

## Indications for Removal of the Patella

Mr. Brooke advocates the removal of the patella for all cases of fracture of the bone. This would at first sight appear to be a rather radical procedure. The results seem to justify it, as he amply proves by the follow-up of his cases. I would classify the following as indications for excision.

### DIRECT INDICATIONS

1. Comminuted fractures, both recent and old.
2. Compound fractures.
3. Post-operative complications of other operative procedures—namely, failure to correct alignment—with late arthritis, etc.
4. Congenitally displacing patellae.

### INDIRECT INDICATIONS

Arthritis: (*a*) mechanical; (*b*) osteo-arthritis. Mechanical arthritis may follow on a wiring or other fixative operation for a fractured patella. The arthritis may be caused by the trauma which broke the bone—giving rise to a degenerative type—or it may be caused by friction between the fractured patella and the femoral condyle. This latter may occur where there has been a failure to obtain an even articular surface to the back of the bone—that is, a failure to secure correct apposition or to correct the tilting of either fragment before they were fixed. A reactionary arthritis may be set up by the presence of a foreign body such as wire in the tissues about the knee-joint.

Osteo-arthritis is often seen in its earliest stages as a degeneration, and subsequent erosion, of the articular surface on the back of the patella and the intercondylar space of the femur. Creaking may be felt if the patella is rocked sideways with the quadriceps muscle relaxed (Warren Crowe's sign). In advanced cases much of the pain and weakness of the joint can be shown to be due to the erosion and exostosis about the patella. Removal of the bone, and thus removal of one of these eroded surfaces, will bring great relief, and possibly may for the time help to stem the progress of the disease by allowing fresh movement again to take place in the crippled joint.

## Case I

A transverse simple early fracture in a fitter aged 45. Whilst ascending the station stairs he missed his footing and slithered down several steps, jarring his knee-cap. He continued his journey and did a full day's work. The next day, his knee being swollen, he rested, but later returned to work. As at the end of a week it was still swollen he went to his own doctor, who sent him to hospital. He walked a mile to get there. On examination he had a slight limp; the knee was swollen, suggesting a haemarthrosis. Extension of the knee was full and was done with moderate power. He could flex it only to 60 degrees before tension stopped him. An *x*-ray film showed a comminuted fracture of the patella. Operation of excision of the patella was advised and was carried out on May 18, 1937. The technique used was that described later in this article, with subsequent physiotherapy.

*After-result.*—In five weeks: no synovitis; flexes 45 degrees; quadriceps, power fair—extends 180 degrees; no limp; at work; no more treatment in massage department. After seven weeks: flexes 110 degrees; extends 180 degrees; power very good. After four months: flexes 120 degrees; extends 180 degrees; power excellent. After seven months: flexes 150 degrees; works at anything; knee is reliable; he can run, and I consider power 100 per cent. The absence of the patella causes no uncomfortable feeling when kneeling.

### COMMENT

One will note the only slight disability and loss of power, in spite of the degree of comminution. This shows that the main pull of the quadriceps can just as easily be transmitted through the two lateral expansions of the tendon. That fact has not hitherto been adequately realized. This degree of comminution, if the fracture had been treated on the orthodox lines of rest on a back splint, must surely have resulted in a roughened posterior surface to the bone, with an inevitable acceleration of osteo-arthritis.

## Case II

This was a transverse fracture of complicated type in a plumber aged 36. In 1925 he was knocked down and sustained a fracture of his femur and possibly also of his patella. His knee was never quite the same after the long period of immobilization necessary. In 1937 he fell down, and this time a radiograph showed a transverse fracture of the patella. He was treated in an infirmary on a back splint. Before coming to hospital he had been having an increasing amount of pain and fluid in the knee-joint. An *x*-ray film showed non-union of the bone four months later, with much backward tilting of the lower fragment. He could flex his knee only 20 degrees, while extension, though full, was very painful and was accompanied by much creaking. The patient localized the pain to behind the patella, and as this was obviously due to friction between the patella and the femur removal of the former seemed advisable. This would no doubt relieve the pain, and at this stage might improve the range of the movement of the knee-joint. Operation was carried out on July 11, 1937.

*After-result.*—In fourteen days he could flex to 60 degrees, with fair power, and extend to 180 degrees. He walked with a stick. Physiotherapy was continued. (This was a compensation case.) After three months he flexes to 60 degrees, and extends to 180 with fair power; he has no pain now, and walks as much as he likes. After five months he flexes to 80 degrees, with 60 per cent. power, and extends to 180 degrees. The patient is very pleased; he is back at work, climbs ladders, and has no pain.

### COMMENT

I do not myself regard this result as disappointing, as it was not definitely known when he first fractured the patella, but the joint when opened at the time of the

operation showed an extensive arthritis. Possibly, now that he is back at work and has no pain, he will use the joint more and increase his own flexion slowly, thus loosening up the tight capsule, etc.

### Case III

This was a chip fracture—delayed—in a plumber aged 37. In April, 1937, he slipped down, sustaining a chip fracture of the upper third of the patella. He was treated on a back splint at rest for three weeks. Eight weeks later he came to hospital complaining of pain after use. An *x*-ray film showed fibrous union but no gross displacement. He was advised, and given, physiotherapy. In August, four months after the fracture, he still had much pain in the knee, which grated on flexion or on rocking the patella on the femur. Operation of excision was advised and carried out on August 16.

*After-result.*—The treatment of the knee following operation in this case was delayed, as he had a second operation consisting of removal of a scaphoid bone from the wrist. After one month he had 30 degrees of flexion and could extend to 180 degrees. After six weeks he flexed to 90 degrees and extended to 180 degrees, with fair power. (Physiotherapy was continued, as this was a compensation case.) After four months he flexes to 100 degrees and extends fully, but persists in using a stick. (At the time of writing he has tripped over and strained the knee, but the quadriceps, though weak, is still intact.)

### Additional Cases

The following are also cases in which excision of the patella has been carried out, but they are only described in brief, as sufficient time has not yet elapsed for a critical survey of the results to be made.

*Case A* (for osteo-arthritis).—Housewife, aged 62, had had pain in the knee for years. First seen September, 1937. Osteo-arthritis of knee marked. Could flex to 130 degrees and extend to 180 degrees, but pain on movement was severe. A radiograph showed advanced osteo-arthritis, with lipping of patella and anterior surface of femur. Loose body present. Operation was performed on October 12 for removal of patella and loose body. The joint on inspection showed advanced erosion and lipping; prognosis poor. After one month: flexed to 60 degrees and extended to 180 degrees; power fair. After two months: flexed to 160 degrees and extended to 180 degrees; power excellent. There is now no pain; the synovial membrane is still thickened, but there is no grating. The patient is very pleased with her operation, and now walks about a mile for pleasure, whereas before operation she dare not walk on account of pain.

*Case B* (for osteo-arthritis).—A labourer aged 56 had had pain in the knee for seven years. First seen September, 1937. Osteo-arthritis of knee marked, pain bad; could only flex knee 45 degrees. *X*-ray film showed advanced osteo-arthritis; there was much lipping of the patella. On September 27 the patella was excised. The joint was stretched and manipulated, being flexed to 90 degrees. After one month: flexes to 45 degrees and extends to 160 degrees. After two months: flexes to 110 degrees and extends to 165 degrees; power of quadriceps fair; has no pain. The patient is pleased with the operation, and is now (December 12) back at full work. On account of the severe arthritis I do not anticipate more movement will return, but his pain is abolished.

*Case C* (for old fracture with separation).—A watchman, aged 60, with one leg. Thirty-five years ago he broke the remaining patella. In March, 1937, he fell and rebroke the patella, and was treated on a back splint. When first seen in September, 1937, he had only 50 per cent. efficiency of quadriceps, and the knee felt very insecure and often let him down. A radiograph revealed a two-inch separation of patella fragments. Operation took place on October 12 for removal of the patella and tightening of the torn patella expansion. This patient is still having physiotherapy at the time of writing.

### Operative Technique

A tourniquet is applied up the thigh and a lateral patella incision is made through the skin. The aponeurosis in front of the patella, if not already torn, is divided transversely and the incision, if desirable, continued into the lateral expansion. The aponeurosis is then turned back as a cuff above and below, while the bone is dissected out, the joint being opened as the patella is removed. I have found that, for some reason yet to be explained, those cases in which the incision is made transversely do better than when it is made in a longitudinal direction; though the latter would appear to cause less strain on the sutured aponeurosis, as when the quadriceps contracts, it will tend to pull the edges of the gap together. My best results, however, have all been from the use of a transverse incision. The ligamentum patellae is the last cut across. The joint is then held open for inspection, and bone chips or torn cartilages can be removed. Any adhesions seen can be snipped across, while the knee can also be flexed gently but firmly as far as it will go, and any more posterior adhesions thus torn. In the cases where the operation is being done for arthritis a careful inspection of the articular surfaces should be carried out as a guide to future prognosis. The lateral expansions and the cavity left in the central tendon are then sewn together with mattress sutures. They will be found to come together very easily. The skin is closed up, the limb is put on a back splint, and several layers of wool are applied with a domett bandage. The latter acts as a haemostatic, and should be put on tightly and left on for a day. Faradism to the quadriceps is started on the third day, and the splint taken off and active movements begun on the fifth; whilst as soon as the patient can contract his quadriceps well and bend at least 30 degrees he is allowed up, wearing a crêpe bandage as support. A month of exercises in the gymnasium is beneficial, but a shorter time in some cases suffices. Bicycle-riding is excellent.

### Conclusions

That some of the patients had an amazingly quick recovery from the previous disability.

That no future arthritis can develop behind the patella following any fracture of the bone.

That there is no possibility of a second operation being likely, as sometimes happens if a wire comes adrift.

Lastly we must note Brooke's claim that the power of extension of the knee is better without a patella than with one. He showed by means of a special spring balance that this was the case.

I am indebted to Mr. Alan Todd, M.S., F.R.C.S., for allowing me to report on these cases, and for handing them over for operation by myself and Dr. H. F. R. Pritchard.

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The Health and Cleanliness Council has issued a booklet called *The New Home* for use by tenants on new housing estates. This booklet is full of useful practical hints, explained in clear, simple language, about such things as drying clothes, taking care of electrical apparatus, the disposition of electric lights, and how to get rid of bugs. There is even an illustration of a mouse-trap. Specimen copies of the booklet will be sent to readers of the *Journal* on application to the Secretary of the Health and Cleanliness Council, 5, Tavistock Square, London, W.C.1.

# A NOTE ON THE INCIDENCE OF SINUSITIS IN CHILDREN

BY

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Much interest has recently been shown in the prevalence of infections of the accessory nasal air spaces in children, and several reports of otitis media and sinusitis have appeared in the medical literature. During a study of the examination of the middle ear in a series of consecutive necropsies (Ebbs, 1937) a similar effort was made to determine the incidence of sinusitis. Clinical reports of the incidence of this disease in children are confined almost entirely to infection of the maxillary antra, and a complete clinical and bacteriological study of maxillary sinusitis has recently been recorded by Crooks and Signy (1936). It is hoped that the present report on the incidence of sinusitis as found post mortem will emphasize its prevalence and provide further statistics for comparison with other districts.

## Method of Investigation

The observations have been made in children of all ages from birth to 14 years who have died from a great variety of medical and surgical conditions. The children have all lived in or near the city of Birmingham, and are representative of the child population in that district. The method used to expose the different sinuses was that described by Pickworth (1935), with minor modifications to suit the age and individual variation in each patient. The frontal sinus was not examined unless specifically indicated, and therefore finds no place in this survey. Information as to the presence or absence of the tonsils, and their infection or otherwise, was not sufficiently complete to be included with the examination of the sinuses. Infection was recorded as present only when definite pus or muco-pus was found in the sinus; sinuses that contained thin watery fluid or clear mucus were considered normal. Histological examinations of the mucous membrane lining these sinuses have not been completed in sufficient numbers to be included in this report. Direct smear examination and culture were carried out in the majority of cases in order to confirm the presence of definite purulent material and bacteria.

## The Numbers and Age Groups

Table I records the number of children examined in each age and also the number who had purulent infection in one or more sinuses. Of 496 children 152 were found

TABLE I.—*The Incidence of Infection in One or More of Sinuses Examined*

| Age in years | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number examined .. | 331 | 60 | 23 | 9 | 13 | 20 | 10 | 9 | 4 | 6 | 2 | 6 | 3 | 496 |
| Normal .. | 223 | 40 | 19 | 8 | 10 | 16 | 6 | 6 | 2 | 3 | 2 | 6 | 3 | 344 |
| Pus present | 108 | 20 | 4 | 1 | 3 | 4 | 4 | 3 | 2 | 3 | 0 | 0 | 0 | 152 |
| „ „ % | 32.6 | 33.3 | 17.4 | 11.1 | 23 | 20 | 40 | 33.3 | 50 | 50 | 0 | 0 | 0 | 30.6 |

to have such an infection. In other words, 30.6 per cent. of the children of all ages who have died in a large children's hospital showed evidence of sinusitis at necropsy.

The number of infants under 1 year old was extremely large in this series, and indicates the age group in which the majority of the deaths in a children's hospital occur. It was found that 32.6 per cent. of 331 infants under 12 months of age and 33.3 per cent. of sixty children in the second year of life had infected sinuses. A further analysis of the first year is shown in Table II. The

TABLE II.—*The Incidence of Sinusitis in Infants*

| Age in months | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number examined | 43 | 60 | 55 | 24 | 18 | 29 | 21 | 17 | 18 | 18 | 12 | 16 | 331 |
| Normal .. | 33 | 47 | 36 | 16 | 12 | 19 | 15 | 9 | 10 | 9 | 7 | 10 | 223 |
| Pus present | 10 | 13 | 19 | 8 | 6 | 10 | 6 | 8 | 8 | 9 | 5 | 6 | 108 |
| „ „ % | 23.2 | 21.6 | 34.5 | 33.3 | 33.3 | 34.4 | 28.5 | 47 | 44.4 | 50 | 41.6 | 37.5 | 32.6 |

incidence rises from 23.2 per cent. in the first month up to 50 per cent. at 10 months. Of the ten infants 1 month or under who had pus in the antra two were only 2 weeks old at death. Infection of the antrum is recorded in an infant only 3 days old (Holt and McIntosh, 1933).

## Incidence of Infection

The incidence of infection in the different sinuses is shown in Table III. In two cases the maxillary antra were

TABLE III.—*The Incidence of Infection in the Different Sinuses*

| | Maxillary Antrum | Ethmoid Cells | Sphenoid Sinus | Middle Ears |
|---|---|---|---|---|
| Number examined .. | 494 | 444 | 305 | 496 |
| Normal .. .. | 350 | 383 | 258 | 216 |
| Pus present .. .. | 144 | 61 | 47 | 280 |
| „ „ per cent. | 29.15 | 13.74 | 15.4 | 56.4 |

not definitely found and therefore the presence or absence of pus could not be recorded. In a few patients only a slight depression was seen, but in the majority there was an easily recognizable cavity, which in some cases was surprisingly large, especially in small infants. The same was true of the ethmoid cells and sphenoid sinuses, although these were found less often. Of 494 infants and children in whom the maxillary antra were examined 144, or 29.15 per cent., were infected. The ethmoid cells were recorded in 444 children, and these showed infection in sixty-one (13.74 per cent.). The sphenoid sinus was examined in 305 patients and infection was present in 15.4 per cent. These figures support the view, held by most observers, that infection of the maxillary antrum is much more frequent than in either the ethmoid cells or the sphenoid sinuses.

Table III also records the incidence of associated otitis media. The examination of the sinuses was carried out at the same time as an examination of the middle ear and mastoid antrum in these 496 children. Only thirty-three had infected sinuses without an associated otitis media, while 280, or 56.4 per cent., were found to have pus in the ears. Of 152 cases with sinusitis 78.2 per cent. had an associated otitis media.

A general idea of the incidence of infection in the upper respiratory tract in infants and children at necropsy is gained when it is realized that in this series 63.1 per cent. had pus in one or more of the sinuses or ears. These figures are supported by clinical and post-mortem

findings in other centres. Thus Crooks (1936) in a clinical study found that twenty-four of 100 children had evidence of infection of the maxillary antra. Skillern (1923) quotes various authors' post-mortem findings, which vary from 47 per cent. to 17 per cent., and give an average of 32.7 per cent.

The view that some patients develop a collection of fluid in the sinuses during the terminal period of a fatal illness, when resistance and normal ciliary action are poor, cannot be satisfactorily disproved in all cases, but the history and clinical course, in addition to the gross sepsis found at necropsy in the majority of these infants and children, is very strong evidence in favour of a pre-terminal infection. The incidence of the common cold and the frequency of respiratory infections in the patients who are brought to a children's hospital are high enough to support the view that a considerable number have an infection in the accessory nasal sinuses. The part which sinusitis has played as a cause of death in this group of children is difficult to assess, since it could have been the aetiological factor or an associated condition or the result of the condition which caused the death.

### Summary

1. The incidence of sinusitis in 496 infants and children examined post mortem was 30.6 per cent.

2. The maxillary antra were observed to be more frequently involved than the ethmoid cells or the sphenoidal sinuses.

3. A high incidence of associated otitis media was found.

4. Infection of one or more of the sinuses or ears was present in 63.1 per cent. of these children.

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# Clinical Memoranda

## Tetanus supervening on Middle-ear Disease

The following case seems to be sufficiently interesting to be placed on record.

### Case Report

An Indian clerk aged 28 had a history of chronic purulent discharge from his right ear since childhood. Twenty days before admission to hospital he introduced some "samundar jahag" into the meatus. (Samundar jahag is a native "drug," and usually consists of powdered cuttlefish bone, but when this is not available dried scum from streams is substituted. These medicines are sold in the bazaar under filthy conditions, but have a local reputation among the less-educated classes for the treatment of suppurative lesions.)

Three days before admission he had difficulty in opening his mouth, stiffness in the back, a feeling of tightness in the chest, and pain in the right ear. All these symptoms gradually became more severe, so he went to hospital. On arrival he complained of the above-mentioned symptoms with stiffness of the legs and tightness of the abdomen in addition. The temperature was 98° F., the pulse 72, and respirations 20.

Trismus and risus sardonicus were present, and the patient lay in bed on his left side, with some arching of the back and retraction of the head, and was moaning quietly. He could speak with difficulty, and complained of tightness of and pains in most of his muscles, and salivation. Spasms occurred on slight irritation. His eyes had a tendency to look to the right, with some internal strabismus, and also tended to roll about, particularly during examination. The fundi were normal and the pupils reacted normally to light and to accommodation. There was no nystagmus. The teeth could only be separated about a quarter of an inch with difficulty. Respiration was shallow, but an examination of the heart and lungs revealed no abnormalities. The abdomen was rigid and felt almost like concrete. The limbs all showed a tendency to spasticity, but the tendon reflexes were normal and the plantar reflexes flexor. Knee and ankle clonus was present on both sides. The right external auditory meatus discharged yellowish offensive pus, and examination showed a reddened meatal canal with a mass of granulation tissue obscuring the drum. The left drum was indrawn; the handle of the malleus was pink, but was otherwise normal. Lumbar puncture resulted in 10 c.cm. of clear fluid being withdrawn under slightly increased pressure; there was no globulin. A few red blood cells were probably adventitious.

There were 9,375 leucocytes per c.mm. of blood; 75 per cent. of these were polymorphs. The red cells were normal and showed no sign of malarial parasites. Examination of the aural discharge showed staphylococci and pneumococci.

The patient was given large doses of tetanus antitoxin intravenously, intramuscularly, and subcutaneously, with liberal sedatives. The ear was dressed with hydrogen peroxide. Though the pains and spasms were brought under control the temperature steadily rose, reaching 101.2° F. on the thirteenth day and coming down by lysis, while the pulse varied from 102 to 136. The symptoms rapidly improved from the fourteenth day. Most of the antitoxin was given by the intravenous route, and altogether 299,000 American units (598,000 I.U.) were injected.

The patient was discharged on the forty-eighth day of admission in good health though rather psychoneurotic. The granulations in the ear had retrogressed, revealing a moderate-sized perforation in the lower part of the drum, and there was very little discharge.

### Commentary

This case is, I think, most unusual; I can find no similar instance in the literature at my disposal. The clinical features and recovery after antitoxin leave little doubt as to the diagnosis, though the pathologist failed to find *B. tetani* in the fourteen successive daily specimens of the discharge. All showed staphylococci, and many of them pneumococci as well. Tetanus toxin is said to travel along the sheaths of the motor nerves, and in this situation only the small nerves which supply the tensor tympani and stapedius muscles and the chorda tympani, and tympanic plexus, in which there are probably some motor fibres, could easily be involved. There were no obvious signs of interference with the right facial nerve, nor was there evidence of any inflammatory process in the pinna.

The pronounced tetanic symptoms, with comparatively little rise of temperature or pulse rate and practically no leucocytosis, may be due to the fact that while the tetanus toxin reached the central nervous system via the motor nerves, very little of the other products of the inflammatory process were absorbed by the surrounding comparatively avascular bony tissues.

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# Reviews

## ENCYCLOPAEDIA OF MEDICAL PRACTICE

*The British Encyclopaedia of Medical Practice: including Medicine, Surgery, Obstetrics, Gynaecology, and other special subjects. Volume 6. Gonorrhoea to Hydrotherapy.* Under the General Editorship of Sir Humphry Rolleston, Bt., G.C.V.O., K.C.B., M.D., D.Sc., D.C.L., LL.D. (Pp. 602; 7 plates, 89 figures. 35s. net.) London: Butterworth and Co., Ltd. 1937.

Of the sixth volume of this encyclopaedia, which deals with the subjects gonorrhoea to hydrotherapy, nearly one-third is taken up by a series of important articles on diseases of the heart. Various authors have contributed to a symposium on heart disease in its varied aspects. Drs. Evan Bedford and J. W. Brown deal with congenital heart disease, pointing out that foetal disease plays a relatively minor part in aetiology compared with developmental anomalies. They adopt the convenient clinical classification, introduced by Abbott and Dawson, into three groups: those without cyanosis in which there is no abnormal communication between systemic and pulmonary circuits; the potentially cyanotic in which such an abnormal communication exists through which the blood is shunted from left to right, cyanosis only occurring if the shunt is reversed by pulmonary embarrassment; and the cyanotic group in which there is permanent shunt of blood from right to left side of heart or in which cyanosis is due entirely to peripheral stasis. The constituent lesions of these groups give a very variable expectation of life, and in the article the individual lesions and defects are discussed in a practical manner. Dr. Reginald Miller deals with rheumatic heart disease in children, not only the clinical aspects of diagnosis and treatment but also the very important problem of prophylaxis among children in general and particularly in the rheumatic child. Established endocarditis is covered in general terms by Dr. A. G. Gibson, who discusses the so-called non-malignant forms, and by Dr. A. W. Falconer, who gives a neat description of the clinical picture, diagnosis, and treatment of bacterial endocarditis. The latter appears to be less common than just after the war, but the outlook is as serious and treatment still unsatisfactory. Diseases of the pericardium and myocardium have separate consideration: the former by Dr. Shirley Smith, who classifies pericardial diseases into acute, tuberculous, and chronic adhesive, and myocardial disease by Dr. A. G. Gibson. The adjectival use of pericardium and myocardium catches the eye in the heading of the sections; in the text the customary adjectives are adhered to. Dr. T. F. Cotton deals with mitral disease, Dr. Maurice Campbell with diseases of the aortic valve, and Dr. Parsons-Smith with those of the right side of the heart. This individualization leads to some overlap: it may be advisable, even necessary, in dealing with heart diseases systematically. Fortunately Dr. Miller, in his excellent article on rheumatic heart disease in children, and Dr. Crighton Bramwell on heart failure, do take a wider view of the subject, emphasizing in the one instance the lesion as a pancarditis, and in the other treatment by estimating, conserving, and improving the cardiac reserve. The articles on complaints associated with bleeding are of high quality. Haematemesis is dealt with by Professor Carmalt Jones, haemoptysis by Dr. Jenner Hoskin, haematuria by Dr. Gaskell, and haemophilia by Professor Davidson, while Dr. Letheby Tidy contributes the section on haemorrhagic diseases dependent usually on some unexplained tendency for spontaneous extravasation of blood to take place into the skin and other tissues and from the mucous membranes. Sometimes this tendency is hereditary, sometimes due to environmental deficiency or an infection; in other instances its origin is unknown or primary. Practitioners confronted by such a type of case will find a perusal of this section most useful.

Flamboyant gout does not occur so often as it did; perhaps the community is more abstemious on the whole, certainly the occupational group has been lessened by improved hygiene. Dr. Buckley points to the constitutional factor as allowing a more ready disturbance of purine metabolism in some subjects. He would not allow general disorders to be regarded as gouty in the absence of raised blood uric acid. For treatment diet, hygiene, medicines, and spa treatment are dwelt on. Dr. M. B. Ray, in discussing hydrotherapy, gives a useful classification of the spas of Great Britain and Europe not only for gout but also for the diseases of the various systems. The principles of the external application of baths and use of mineral waters are dealt with. Dr. Cumberbatch describes the apparatus for application of radiant heat and its therapeutic uses. The infective complaints in this volume are capably dealt with by experts, gonorrhoea by Colonel L. W. Harrison, and ulcerative granuloma by Mr. R. V. Rajam. Professor H. R. Dew has succeeded in compressing into the space allotted a useful summary of the pathology and clinical aspects of hydatid disease. A readable and up-to-date account of lymphadenoma or Hodgkin's disease is offered by Dr. M. H. Gordon, Dr. A. E. Gow, and Sir Humphry Rolleston. A good deal of research has failed to determine the cause, though much misunderstanding has been cleared up. It is possibly a virus disease. Two useful and broadminded discussions of surgical subjects are contributed by Professor Grey Turner on hernia, and Mr. Norman Lake on injuries, infections, and deformities of the hand. The subjects on the nervous system comprised in this volume are headache and hydrocephalus by Dr. C. P. Symonds, hemiplegia by Dr. Blake Pritchard, hemiatrophy and hemihypertrophy by Dr. Denis Brinton, and hepato-lenticular degeneration by Drs. F. M. R. Walshe and J. G. Greenfield. Dr. Cockayne brings together very clearly and helpfully the facts of Mendelian inheritance in their application to human disease. So far it has not been possible to associate the constitutional inheritance with proneness to a particular disease.

This volume carries on the admirable characters which we have remarked in regard to those that have already appeared. The preparation is made with great care; in this volume we have noted typographical errors only on pages 36 and 201.

## HENNING'S GASTROSCOPY

*Textbook of Gastroscopy.* By Norbert Henning. Translated by Harold W. Rodgers, F.R.C.S. (Pp. 86; 7 coloured plates, 27 figures. 7s. 6d. net.) London: Humphrey Milford, Oxford University Press. 1937.

Exploring the lining of the stomach by direct vision has been the aim of diagnosticians for many years. By means of the flexible gastroscope this can now be accomplished with comparatively little discomfort or risk to the patient, and the results so obtained are of considerable clinical value. Several good books on the subject of gastroscopy have been published, notably those of Schindler and Henning in Germany and Moutier in France. Henning has attracted a series of visitors from this country, who have learned the technique under his guidance, and one of these has translated Henning's book. Mr. Rodgers is to be congratulated on the excellence of the translation.

Those who are considering the adoption of gastroscopy as a clinical aid will be interested in the chapters on the procedures adopted to prepare the patient, provide adequate anaesthesia of the oropharynx and gullet, and obtain views of different parts of the lining mucous membrane. There is no doubt that much familiarity in the use of the gastroscope is needed to determine the range of normality of the appearances, and especially the diagnosis of early or minor differences from the normal. The chapter on the gastroscopic findings in diseases of the stomach will be found most useful. The illustrations reproduced are those which Professor Henning has obtained by his own method of gastrophotography, some in black-and-white and some tinted photographs.

Owing to the difficult technique gastroscopy was not regularly adopted until recent times. The advances made in radiology enabled early diagnosis to be made of changes in the mucous lining of the stomach. There are occasions when the radiological diagnosis is indefinite, however; and sometimes the gastroscope can elucidate the cause of a doubtful radiological finding. It is then a useful supplementary procedure. Professor Henning considers radiology is preferable in the diagnosis of carcinoma. It is in gastritis and in assessing the progress of healing of gastric ulcer that gastroscopy appears to have a real field of value.

## CONSERVATIVE OBSTETRICS IN BRIEF

*Maternal Care. The Principles of Antepartum, Intrapartum, and Postpartum Care for the Practitioner of Obstetrics.* Approved by the American Committee on Maternal Welfare, Inc. By Dr. F. L. Adair. Prepared by Dr. W. C. Danforth, Dr. G. W. Kosmak, Dr. R. L. DeNormandie, and Dr. F. L. Adair. (Pp. 93. 4s. 6d. net.) Chicago, Illinois: University of Chicago Press; London: Cambridge University Press. 1937.

The purpose of this book is "to set forth in simple and concise form some of the basic principles of maternal care." It contains 93 pages only, and as the whole of the medical treatment of pregnancy, parturition, and the puerperium is included it is obvious that a good deal has had to be sacrificed to compression. On the whole, however, the book is surprisingly comprehensive, and the more common complications are adequately described. What is, however, more important is the refreshing conservatism of the obstetric methods suggested for their treatment, and there are few of the general principles advocated which will not meet with complete approval on this side of the Atlantic. There are surprisingly few omissions, but it is unfortunate that more stress is not laid on the value of gum-saline infusion for post-partum haemorrhage. It is true, as the authors state, that nothing is so good as blood in this condition, but the inevitable delay associated with blood transfusion is often dangerously long, and as the urgent requirement is fluid replacement rather than haemoglobin it is easy to appreciate the paramount value of the former. Gum saline is an indispensable constituent of the obstetrician's armamentarium, and the recent improvement in the mortality from post-partum haemorrhage may be directly ascribed to its more widespread use.

Though this book is sponsored by so responsible an authority as the American Committee on Maternal Welfare, and edited by such an eminent physician as Dr. Adair, it is a little difficult to appreciate exactly to what particular branch of the profession it is directed. It is too short for a textbook for students, too superficial for the practising obstetrician, and too medical for the midwife. Its main value would appear to be for the general physician practising midwifery either occasionally or remote from a large centre, but there is no doubt that a reiteration of the fundamental principles of conservative obstetrics such as is contained in this small volume cannot but be of value to all those engaged in midwifery in whatever capacity.

## A GERMAN MEDICAL POCKET-BOOK

*Medizinal Index und Therapeutisches Vademecum.* Teil I, II. Herausgegeben von Medizinalrat Dr. M. T. Schnirer. (Pp. 432 and 313. M. 4.60.) Vienna: Franz Deuticke. 1938.

Schirer's *Medizinal Index* is an annual pocket-book which presents an enormous mass of data in very condensed form. It comprises two volumes. About half of the first volume is occupied by a therapeutic index, and most of the remainder (150 pages) by a dictionary of official and proprietary remedies. The mere number of new proprietary remedies introduced from the Continent is a serious embarrassment, and this dictionary will be found of great service by all who require a quick reference to new and unfamiliar names. Perusal of the contents shows that it has been brought up to date and includes most of the important substances which have been introduced during the last few years.

The most interesting section of the second volume is an annual report on therapeutics (101 pages). This provides striking evidence of the rapidity with which therapeutics is advancing at present. The increasing variety of new uses for prontosil and its derivatives is perhaps the most important advance, but references are given to numerous interesting recent developments in vitamin and hormone therapy—for example, vitamin E in habitual abortion, vitamin C in asthma, protamine zinc insulin, use of insulin shock in schizophrenia, and various applications of sex hormones. This report is followed by a series of short articles on subjects of present therapeutic interest, such as vitamin therapy, short-wave therapy, and puerperal disinfection. A table of ten pages, giving the composition of foods, deserves mention, since, in addition to describing the calorie value and the fat-protein-carbohydrate content, it also describes the content of sodium chloride, calcium, iron, and oxalic acid. Moreover, it indicates the content of the chief vitamins.

The points mentioned suffice to indicate the very large amount of varied information that is contained in these pocket volumes.

## CLINICAL CHEMISTRY

*Chemical Methods in Clinical Medicine.* By G. A. Harrison, B.A., M.D., B.Ch., M.R.C.S., L.R.C.P. Second edition. (Pp. 585; 86 illustrations, 3 coloured plates. 21s. net.) London: J. and A. Churchill Ltd. 1937.

A second edition of Dr. Harrison's well-known book has been eagerly awaited for some time. The original, almost a classic in its particular line, was outstanding chiefly by reason of the fact that it really took its readers inside the laboratory, the activities of which, moreover, were in closest possible relation with those of the ward. As a practical author Dr. Harrison has not been unmindful that his task in presenting a new edition should not be limited to bringing his material up to date, but should also offer some solution to the very pressing problem which is ever facing the clinical chemistry department—that of finding ways and means of accommodating the greatly increased work which falls upon it. The author's main contribution in this direction is to make extensive use of the Lovibond comparator, with its permanent glass standards. Quantitative methods can thereby be much simplified, and the book contains many excellent examples of methods which lend themselves to this type of technique.

In the present edition the illustrations, notable for their faithful reproduction of what is actually observed, both macroscopically and microscopically, have been considerably increased, and the many diagrams included to assist in the identification of the various forms of crystalline and other constituents of urinary deposits could scarcely be improved upon. Indeed, the whole book is written with true understanding of the needs of both students and technicians, and has undeniable claims to first place in any list of books on chemical pathology that might be recommended to them.

## USES AND ABUSES OF POISONS

*Poison: The History, Constitution, Uses, and Abuses of Poisonous Substances.* By Hugo Glaser. Translated into English by Marguerite Wolf. (Pp. 292. 8s. 6d.) London: Hutchinson's Scientific and Technical Publications. 1937.

Hugo Glaser, in this book written for the educated but non-specialist reader, describes the manifold uses mankind has made of poisonous substances. Trials in cases of criminal poisoning attract so much popular attention that we are apt to forget that these occasional crimes are of negligible importance compared with other less sensational problems such as food poisoning, industrial poisoning, and poisoning due to injudicious self-medication.

This volume contains fewer than 300 pages, but the author touches on most of the ways in which toxic substances influence the life of modern man. He discusses domestic poisons, such as benzene and phosphorus, gas warfare, drugs of addiction, criminal poisons, and food poisons, concluding with chapters on arrow poisons, venoms, and bacterial toxins. The range covered, therefore, is wide, but by choosing points of general popular interest and by avoiding any attempt at a systematic survey the author has put together a very readable and interesting volume. Dr. Glaser's extensive knowledge of his subject results in the introduction of many facts in medical history that are not widely known. For example, there is an account of the manner in which Sigmund Freud just missed being the discoverer of the local anaesthetic properties of cocaine. In another chapter the author describes the epidemic of methyl alcohol poisoning which caused ninety-two deaths in Berlin in 1911. In general it may be said that while the volume is primarily intended for the non-medical public, few members of the profession will fail to find in it information that is both interesting and new.

The translator has done her work well in that she has maintained an easy and fluent style—a matter of great difficulty when translating technical or even semi-technical works from German into English. There are a certain number of inaccuracies, the most serious of which is the substitution of the name potassium chloride for potassium chlorate (p. 283) in the description of poisoning by the latter substance.

## Notes on Books

A new edition—the tenth—of *Lippincott's Quick Reference Book for Medicine and Surgery* (Philadelphia and London: J. B. Lippincott Company, 65s.) has been prepared by the author, Dr. GEORGE REHBERGER of Johns Hopkins University. To readers who are not yet acquainted with it we may point out that this enormous compilation is made up of eleven parts dealing respectively with (1) general medicine and surgery, including neurology and the diseases of infancy and childhood; (2) gynaecology; (3) genito-urinary diseases; (4) obstetrics; (5) skin diseases; (6) diseases of the eye; (7) diseases of the ear; (8) diseases of the nose; (9) diseases of the throat; (10) orthopaedics, including fractures and dislocations; and (11) drugs. It thus covers in brief the whole field of practical medicine with the exception of psychiatry. Each disease or disorder is treated alphabetically within its section, and the concluding part takes up in alphabetical order all the drugs mentioned in the earlier text. Dr. Rehberger claims nothing as his own in this work except the plan or system, the selective judgment employed, and the great labour it has cost him. In revising his material he has continued to keep in mind, first and foremost, the needs of the general practitioner. Much of it has been almost wholly rewritten in the light of new knowledge. Two superficial changes may be noted: the agreeable green binding and the numbering of the 1,354 pages of text.

*Gegenwartsprobleme der Augenheilkunde*, edited by RUDOLF THIEL (Leipzig: Georg Thieme, RM. 16), is a collection of advanced postgraduate lectures delivered at Frankfort in February, 1937. The twenty-seven articles deal with medical ophthalmology, neoplasms, psychological aspects of ophthalmology, focal infection, chemical warfare, and eugenics. Some of the contributions, such as the one by Professor Olivecrona on meningioma of the olfactory groove, are almost monographs on the subject under discussion, but most of the articles are essentially restatements of well-known and established facts. In a compilation of this kind a certain lack of proportion is inevitable, but the volume would have benefited by the elimination of those contributions that give information quite readily obtainable elsewhere. An interesting sidelight is given by the three articles on the significance of focal sepsis in ophthalmology. Little importance was attached to this in Central Europe at the time when focal sepsis had a great vogue in English-speaking countries. Judging by these three articles the subject is becoming of increasing importance in Germany now that it is declining here. No doubt those who attended the course will appreciate this volume as a memento. To the wider ophthalmic public it brings nothing particularly new.

*Der Blutdruck des Menschen*, by Dr. ESKIL KYLIN (Dresden and Leipzig: T. Steinkopff, RM. 24), gives a general review of the physiology and pathology of his subject, which is treated in the following order: normal blood pressure, physiology and pathology of raised blood pressure, hyperpiesis, physiology of lowered blood pressure, pathology of lowered blood pressure. Dr. Kylin is a recognized authority on this subject, which he has studied for the last two decades, and he gives a competent review of modern physiological knowledge. Nearly half his volume is occupied by a discussion of the forms and causes of hyperpiesis. This is a notoriously difficult and controversial subject. He divides hypertonic diseases into two forms: (1) capillary hypertonia, which occurs with acute diffuse glomerulonephritis and is due to peripheral causes; (2) arterial hypertonia, in which there is no rise in capillary pressure and which is due to various causes. The aetiology and pathology of the various groups are discussed. The author marshals a large amount of evidence in support of his views, but the subject is controversial and the evidence available is incomplete and often contradictory; hence the views expressed cannot be regarded as firmly established. The volume concludes with a useful bibliography containing more than 1,000 references.

The fourth volume of the forty-seventh series of *International Clinics* (J. B. Lippincott Company, 50s. a set of four volumes) is divided into six sections devoted respectively to vitamin deficiency (diagnosis of pellagra), paediatrics (pulmonary affections in childhood, school hygiene), endocrine glands, infectious diseases (tetanus, Weil's disease, chemotherapy in pneumonia), urology (obstructions at the bladder neck, aberrant renal vessels), and a discussion of surgical conditions within the abdomen.

# PREHISTORIC PEOPLE OF MOUNT CARMEL

## LECTURE BY SIR ARTHUR KEITH

At the Royal College of Surgeons of England on February 14 Sir Arthur Keith, M.D., F.R.S., delivered a special lecture on the prehistoric people of Mount Carmel, in which he described the work of the expedition led by Miss Dorothy Garrod and financed by the British School of Archaeology in Jerusalem and the American School of Prehistoric Research.

The early Palestinians, said Sir Arthur Keith, were quite unlike any people now living, but they were of great interest because, if not our actual ancestors, they were certainly nearly akin to the stock which in the course of time gave to the world its Caucasian or white inhabitants. Hitherto the search for the fossil ancestor of the white man had been in vain, but the excavations made on Mount Carmel by Miss Garrod were destined to give the small country of Palestine a very important place in the picture of prehistoric man.

Man began to inhabit the caves of Mount Carmel long before the onset of the last glaciation in Europe. One cave from an archaeologist's point of view was the richest ever opened; it was filled with fossiliferous earth tramped down by the feet of prehistoric man until an accumulation over 80 ft. in depth had been formed. From bottom to top the strata were full of stone tools, fossil remains of animals—many of them extinct species—and the bones of men and women. It was no exaggeration to say that these deposits recorded the history of man in Palestine over a period of at least 100,000 years, perhaps longer. The strata began while man was still in the early age of stone culture; they left off at about the time of Abraham.

### Complete Skeletons Found

The hitherto existing knowledge of fossil man had been built on prehistoric "scraps," but at Mount Carmel complete skeletons had been found. One small cave excavated by Mr. T. D. McCown of the American School proved to be a veritable cemetery. The fossil remains of ten individuals were found in it, three of them complete skeletons. All the individuals save one were under 50 years of age; the expectation of life among these early inhabitants of Palestine was not good.

The completeness of this representation of a prehistoric community was due to two circumstances: the careful way in which the dead were buried, and the fact that Mount Carmel was composed of limestone, which preserved bones better than any other rock, although it was a stone which made extraction extremely difficult. The bone-containing breccia, hard as cement, had to be cut away in blocks weighing a ton or more and conveyed from the slopes of Mount Carmel to Lincoln's Inn Fields, where the rougher work of extraction was done. The finer work, including restoration, was done at the Buckston Browne Farm at Downe in Kent. Here, within sight of Darwin's old home, Sir Arthur Keith and Mr. McCown "had brought the old Palestinians to life."

The Book of Genesis stated that before the flood there were giants in the land. These fossil people were not quite worthy of the name. The men were from 5 ft. 8 in. to 5 ft. 11 in. in height; the women were very short, from 5 ft. to 5 ft. 4 in. It had been possible to study every bone of the feet, hands, and arms. These people had straight and strong limbs and ample chests. Their spinal vertebrae retained certain simian details in their conformation. It had been possible to measure their heads and in some cases to take casts of their skull cavities. In point of size they had brains equal to those of modern man, but of simpler convolutionary pattern. The muscles of their tongues were attached to their lower jaws as ours were, and all the parts of the brain which indicated capacity for speech were present. But in their anatomy they still retained many primitive marks. Their eyebrow ridges, like those of the gorilla, formed great bars of bone above the orbits, their jaws were massive, their mouth cavities capacious, and their necks exceedingly thick and strong.

Nowhere in the world to-day could there be found a local group of people showing the wide range of structural variation of these fossil Palestinians. Their chins were at every stage of evolution, from a chinless stage comparable to the chimpanzee to chins moderately developed. In some of them the nose form might well have been the prototype of the Roman; in others an almost negroid type prevailed. One woman had her closest affinities with the primitive Neanderthal type of Europe; one man might have been a crude form of the early European. They appeared to be a plastic folk in the throes of evolutionary change.

### Relation to Neanderthal Man

Before the last glacial epoch Europe was inhabited solely by peoples of the Neanderthal type; their fossil remains had been found as far west as Jersey and as far east as the Crimea. Eastwards the type approximated somewhat to that now found in Palestine. In Mount Carmel there was a people whose date was earlier, not later, than that of the Neanderthalians of Europe. In the points where the Palestinians differed from the Neanderthalians they were Caucasian or modern. Was Palestine, then, the homeland of Europeans? That was not the inference Sir Arthur Keith was inclined to draw. He believed that, as research was carried further into Western Asia, the fossil remains of men who had still less of the Neanderthalian in them and more of the modern man than was the case at Mount Carmel would be found. The first glimpse obtainable in Europe of the early Caucasians or whites was at the time of the passing of the crisis of the last glaciation. They then appeared in South Europe as Cromagnons and in Central Europe as Predmostians. The discovery at Mount Carmel suggested that their homeland would be found in Western Asia. The tall men of Mount Carmel might not be the ancestors of the Cromagnons, but only distant relatives.

The most surprising result of these excavations was the light thrown on the mentality of the early Stone Age. Care of the dead was one of the hallmarks of humanity, and the Mount Carmel people showed great care for their dead. The youngest child was placed in its grave in a sitting position with limbs flexed under the trunk and arms folded. The tallest man had in his embrace the fossil jaw of a boar, not, of course, buried with him in the fossil state but evidently carrying with it a meal—pig's tongue—of which he was fond.

### The Oldest War-wound

When the hip-joint of one of the men was cleared of the limestone breccia it was found to be shivered, and on closer examination a perforation was found at the centre of the injury. A cast was taken and revealed the image of a four-sided spear head. It had not been known that such weapons were invented at so early a date. It had been thought that the only fighting weapons possessed by these early men were stone clubs. A spear to penetrate the whole thickness of the hip-joint of a large-framed man and to enter the pelvis, as this weapon did, must have been finely tempered and driven with exceedingly great force. Even at the very early period represented by the caves of Mount Carmel man was already a fighter, and could be cruel as well as kind. This Mount Carmel hip-joint represented the oldest "war-wound" known to surgeons.

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Signor Luigi Bizzozero, the son of Giulio Bizzozero of blood platelet fame, has bequeathed 10 million lire to the Ospedale Maggiore, Milan.

# HEALTH OF ROYAL AIR FORCE

## REPORT FOR 1936

In the report on the Health of the Royal Air Force[1] for 1936 an increased sickness incidence of 48 per 1,000 of strength over that for 1935 is recorded; this was largely accounted for by increases in the incidence of German measles and influenza. Invalidings from the Service rose from 4.8 per 1,000 in 1935, which was the lowest figure yet recorded, to 5.5 per 1,000 in 1936. These figures compare with average incidences of 6.2 and 9.9 per 1,000 for the periods 1928–35 and 1921–7. Venereal disease again showed a reduction from 9.5 per 1,000 in 1935 to 9 per 1,000 in 1936; this is the lowest incidence since the inception of these reports in 1921. Of the officers of the general duties branch liable for flying duties as pilots 97 per cent. were fit for full flying duties; this is the highest figure yet recorded. Among apprentices there were decreases in all diseases as well as in the incidence of injuries. As in previous years, pneumonia was one of the chief causes of death from disease, as distinct from deaths from injury.

### Special Investigations

In all cases of jaundice in the Royal Air Force arising in the United Kingdom in 1936 special notes were made with a view to determining the causes. In none was there any history of recent employment in aeroplane doping. Two of the thirty-three cases were instances of Weil's disease traced to swimming in infected water, one at Dublin and the other at Henlow. One jaundice was the sequel of intravenous arsenical injections, but the majority appeared to be of the so-called infective catarrhal type. One officer contracted kala-azar while in the Aden Protectorate; this disease had not previously been recorded in Aden, and search was made to ascertain its local distribution there. A portable electrolytic water-sterilizing unit, delivering 250 gallons of purified water per hour, was constructed for transportation by aeroplane or motor car. The whole apparatus weighed about 150 lb., packed neatly in two 2-ft.-cube cases, and could be assembled in ten to fifteen minutes, including the time taken to prepare the brine and ammonia solutions. The apparatus proved very efficient, producing a clarified and purified water fit for drinking.

The twelve members of the flying-boat cruise from Malta to West Africa in December, 1936, were protected against yellow fever by inoculation, the serum and virus being prepared at the Wellcome Bureau of Scientific Research, London, and forwarded to Malta by air. The inoculations produced little or no reaction other than slight headache. Additional precautions taken were pressure spraying of aircraft twice daily with "pyrocide 20" and half an hour before departure from any port of call, and the enforced use of mosquito nets by all members of the flight. No medical officer was carried. There was no case of illness. Among the physiological problems affecting the airman particularly attention was given to the avoidance of fatigue, in the interests of efficiency, with special relation to posture, noise, and the purity of inspired air; the risks to airmen of breathing air contaminated even to a very small extent with exhaust or other harmful gases, and the protection of workers in special testing chambers from this risk; the defence of the Royal Air Force against war gas, and the instruction of medical officers and airmen in the principles of self-protection and the care of the gassed, design of buildings, appliances and clothing; the design of flying headgear, including the masks required for breathing oxygen at great heights and the use of other chemical substances in addition to or in place of oxygen for this purpose; the physiological problems of very high flying, of other work at ultra-low pressures and in great cold, and of the high speed of modern service aircraft; the design of special instruments for the examination of flying candidates and personnel, with particular attention to the predetermination of the ability to learn to become a service pilot; and the mechanical forces encountered by the human body in flight, its reaction thereto and protection therefrom.

### Improvements in Hygienic Conditions

New types of barrack blocks were built with well-appointed lavatory annexes having slipper, foot, and shower baths and an adequate supply of hot water. Dish-washing machines, either of the revolving brush or of the turbulent type, thermostatically controlled to ensure hygienic washing, were installed in annexes to airmen's dining halls in most barracks of permanent construction. Observations are being made on the comparative value of these two types of machine. Many clothing improvements were introduced, open-neck tunics replacing stiff upright collar types. The drivers of motor petrol tankers were supplied with leather gloves as a protection against petrol dermatitis. Topees lined with aluminium fabric, as an additional protection against heat, were issued on an experimental basis to certain units in the Sudan. A pool system to deal with the bulk disinfection of geographical groups of stations as an economy measure was introduced in some places.

[1] London: H.M. Stationery Office, 1938. (2s.)

# TREATMENT OF YOUNG OFFENDERS

The country first realized in 1908 that delinquency in children was a social problem that needed a constructive solution. In that year, thanks largely to the pioneer efforts of Clarke-Hall, the Children Act, 1908, was passed and set up juvenile courts. The Prevention of Crime Act introduced Borstal training, and the Probation Act of the previous year had given magistrates wide powers of controlling and supervising children outside prisons. Since that time the Home Office, in co-operation with many enthusiastic voluntary agencies, has made great strides in its provision, not only for the optimistic treatment of child offenders, but also for the prevention of juvenile crime. The Children and Young Persons Act, 1933, improved the juvenile courts by providing that they should be conducted by specially qualified magistrates in informal surroundings and empowering them to deal with children requiring special care and protection by placing them in the charge of a "fit person."

The Home Office recently issued its fifth report on the work of the Children's Branch.[1] The report is the first since 1928, and is the work of Mr. J. F. Henderson and Mr. Arthur H. Norris. It shows evidence on every page of the enlightened enthusiasm of these two workers. The reproach is often levelled at the Civil Service that its members are hidebound bureaucrats. The heads of the Children's Branch have shown themselves to be as true pioneers as any of their colleagues outside. The reproach of official obstructiveness cannot be levelled at their Department, which is as ready to initiate reform as it is to encourage the enterprise of voluntary bodies.

### Juvenile Courts

The 1933 Act laid down that the justices of every petty sessional division should elect a panel of their number specially qualified to sit in juvenile courts, and that the court should consist of not more than three members, one of whom should, if practicable, be a woman. It was soon found that in a number of divisions no woman justice was eligible. The Lord Chancellor therefore appointed to the peace commission a number of women, and also men, thought to be specially suitable for juvenile courts. In 1936 the Home Secretary issued a circular containing advice on the principles which should be followed in electing the new panels when the three-year appointments made in 1933 expired. The returns showed that fewer men justices and more women justices were elected, and the number of panels containing no woman fell from 212 to sixty-six, these being nearly all in districts where the volume of work is small. An effort is being made to reduce the average age of justices, and

[1] H.M. Stationery Office. (2s. 6d. net.)

the clerks to justices are invited to include the ages of their magistrates in their returns. Some justices (or their clerks) have exhibited a reluctance—shy, indignant, or coy—to disclose precise particulars of age. One clerk, the report relates, returned the ages of the men justices but begged to be excused from the delicate task of asking the women justices their ages. Very few indeed are under 50, and the largest age group is 60–69. In London the juvenile courts are also staffed by lay justices. The Department is satisfied that justices in general take great pains in obtaining full information about the cases before them and consider carefully the various methods of treatment open to them before making their decision. The Portsmouth panel give, in their reports, a formidable list of persons and organizations, official and unofficial, whom they constantly consult.

The figure for boys found guilty of indictable offences since 1929 (the number of girls is negligible) has doubled. The report observes that there are those who regard the change as insignificant, because at their highest the figures represent a very small fraction of the total number of boys in the country. Moreover, it says, law-breaking by boys is far less serious than law-breaking by adults. Often it is a manifestation of the spirit of adventure and is not deliberately anti-social. Some young offenders are mentally below normal and therefore less responsible, and there are no professional criminals among boys. There has undoubtedly been a large rise since the Act, and this, the authors of the report explain, is due to the Act itself, with its much greater opportunities for turning young offenders into honest citizens. The approved schools get a large percentage of dull and backward children, and this aspect of delinquency is to be specially investigated, in addition to the general inquiry which the Home Secretary is shortly making into the whole problem of juvenile delinquency.

### Psychology in the Juvenile Courts

Juvenile courts are coming more and more to seek the advice of medical psychologists, which often throws valuable light on the reasons for a child's conduct. The report, however, points out that whatever psychological advice is available the responsibility for acting on it rests with three lay justices. This fact may not always be sufficiently present to the mind of the specialist. The ordinary member of the public has not yet gained complete confidence in medical psychology—and indeed, considering the chaos of jarring atoms which is the present state of medical psychology in the country, this lack of confidence is not in the least surprising. When medical psychologists have so little confidence in one another the layman can hardly be blamed for not having more.

The skilled psychiatrist, the report says, is handicapped by two facts: his technical language is popularly used by many people who do not really understand it; and serious psychology is discredited by a large number of amateurs and charlatans. In some cases where the diagnosis of a child's motives is difficult a report by a skilled and experienced medical man is of great value. As courts come to realize this fact they will probably make a correspondingly greater use of psychological advice. There are also unusually difficult cases in which the court would feel itself to be on surer ground if the child could be observed for long enough by a skilled staff in a residential centre. The Goldsmiths' Company has offered the Home Office £6,000 towards the establishment of an observation centre primarily for London children, and the starting of an experimental centre on a modest scale is being considered.

### Methods of Treatment

The most difficult task of juvenile courts is to decide what method of treatment to apply to a boy or girl who has committed an offence, needs care or protection, or is beyond the control of the parents. A court may make a supervision order in respect of children in the last two classes. Courts are gradually making more use of this power, and the Home Office hopes to have the law amended to enable a court to impose the conditions of residence and others which may be imposed in a probation order. The "fit person" to whom the court may commit a child in need of care or protection is often a local authority, which must place the child with foster-parents and not, except with the Home Secretary's consent in special cases, in an institution. It is hoped that in course of time juvenile courts and local authorities will make a greater use of this power, which can also be exercised over offenders.

Hitherto complaints by school inspectors of truancy have been heard before ordinary courts, which usually send the child to an approved school. The 1933 Act allows the court as an alternative to commit the child to the care of a fit person—that is, the local authority for boarding-out. This alternative has hardly been used at all, probably because the ordinary courts are not familiar with the power to commit to the care of a fit person. In practice there is no distinction between truants and children in need of care and protection. After consulting a large number of associations and authorities the Home Secretary has advised the Lord Chancellor to make rules assigning truancy cases under the Education Act, 1921, to the juvenile courts, and it is expected that these rules will very soon be made. The authors of the report hope that courts and education authorities will bear the alternative and less drastic method of boarding-out in mind when dealing with truancy.

Nearly all the indictable offences for which children and young persons come before juvenile courts are thieving or dishonesty of some kind. About a quarter of the cases are dismissed, half are put on probation, a tenth are sent to approved schools, and an insignificant number are committed to the care of a fit person. The report says that a very small number are ordered to be birched—146 in 1934, 211 in 1935, and 155 in 1936. Considering the overwhelming evidence that birching is a thoroughly bad form of punishment, it seems a pity that the authors of the report have not specifically condemned it. They remind the courts that it is within the power of a court to underline the importance of parental responsibility by requiring parents to enter into recognizances for their child's good behaviour. The stipendiary magistrate at Salford found the result entirely satisfactory in ten cases out of sixteen. There must, of course, be an understanding that the order is not made as a punishment to the parent, and that if the parent co-operates it will not be enforced even if the child lapses.

### A Valuable Survey

The report contains much valuable and interesting matter which cannot be summarized here. The constructive training and recreation given in approved schools is immensely important and not by any means fully realized. How many people, for instance, know that the children get annual home leave, during which they often find jobs; that they go to holiday camps and on tours in the summer? The report also contains scathing remarks about the arrangements in some voluntary homes for girls.

To sum up, the Act needs the co-operation of many different authorities and interests, and cannot be applied all at once. With each year its application will probably become more varied. The growing interest in everything concerning children is leading to their more intelligent treatment by the courts. The fact that the amount of adult crime is either stationary or declining suggests that in the recent past offenders have been treated on the right lines. The treatment applied under the new Act to the children of to-day will therefore probably reduce it still further.

## ANALYSIS OF CASES OF SYMPATHETIC OPHTHALMIA FROM SCHOOLS FOR BLIND CHILDREN

In the course of the investigations of the Prevention of Blindness Committee a report was presented by a member of the Specialist Subcommittee on Sympathetic Ophthalmia in children. In the belief that the report may be stimulating and provide food for thought they submit it for medical publication in the hope that this will be provocative. It is realized that owing to the small number of cases no accurate generalizations can be made. From the analysis of the cases of sympathetic ophthalmia it will be seen that the earliest case of injury occurred in 1921 and the two most recent as late as 1936. Eleven patients were treated at hospital, eight of them immediately or the day after the accident and one a week later having previously been treated by a medical practitioner; in two cases information on this point is not forthcoming.

The promptitude with which medical advice was sought does not seem, contrary to accepted principles, to have prevented the onset of what is probably the most disastrous calamity in ophthalmic surgery. One is forced to ask whether this is because the seriousness and proper treatment of injury to the eye are not adequately realized. Another striking fact is the high proportion of urban cases supposedly within easy reach of expert surgeons with all the equipment of properly found hospitals to hand. Furthermore, four injured eyes were removed after the onset of ophthalmia neonatorum. It is generally recognized to be better practice to leave the injured eye *in situ* after the onset of sympathetic ophthalmia, since the results of the inflammation in the sympathizing eye are so destructive to vision that frequently the injured eye has the better sight of the two in the end. Moreover, removal of the injured or exciting eye has little or no influence upon the course of the disease in the sympathizing eye. These considerations so exercised the minds of the medical members of the committee that, in order to obtain a wider publicity, they have sought publication of their findings in a channel not usually employed by the committee. Full information regarding the onset of sympathetic ophthalmia was not available in all cases: the interval between the injury and the removal of the injured eye varied, in the ten cases where details are given, from "almost immediately" to one year.

Five cases said to be sympathetic ophthalmia have been rejected: three cases owing to the nature of the injury (lime burns, "fly into eye," struck by tennis ball) and two because the nature of the injury was not known.

*Eye Injuries occurring in Childhood: Penetrating Injuries—Sympathetic Ophthalmia*

| | Year Injury Occurred | Age at Time of Injury | Where Living at Time of Injury—Urban or Rural | Medical Advice Sought | | | | Time between Injury and Onset of S.O. | Interval between Injury and Removal of Injured Eye | Was Injured Eye Removed *Before* or *After* Onset of S.O.? | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Hosp. | Med. Pract. | Oph. Surg. | How Soon after Injury was Medical Advice Sought? | | | | |
| 1 | 1924 | 7 | Rural | Yes | | | Day after | 9 months | 9 months | Immed. after | |
| 2 | 1927 | 3½ | Urban | ,, | | | Not known | Not known | Not known | Not known | No information as to whether injured eye removed or not |
| 3 | 1930 | 7 | ,, | ,, | | | At once | ,, ,, ? 6 months | Almost immediately | Before | Uninjured eye removed 6 months after accident |
| 4 | 1932 | 5 | ,, | ,, | | | Next day | Not known | Not known | Not known | |
| 5 | 1934 | 12 | ,, | ,, | | | Following day | 6 weeks | ,, ,, | ,, ,, | No information as to removal of injured eye |
| 6 | Not known (now 10) | | ,, | ,, | | | Same day | 3 months | ? 6 months | After | |
| 7 | 1936 | 8 | ,, | ,, | | | Immediately | Not known | Not known—"After two operations" | Not known | |
| 8 | 1932 | 4 | ,, | | Yes | | ,, | ,, ,, | One year | ,, ,, | |
| 9 | 1935 | 12 | ,, | Week later | First few days | | ,, | 8 weeks | 3 weeks. Operation postponed owing to collapse under anaesthetic | Before | |
| 10 | 1921 | 4 | ,, | | | Yes | ,, | About 2 months | Not known | Not known | |
| 11 | 1931 | 8 | ,, | | | ,, | 4 days after | Soon after removal of injured eye | Removed when 9 years old | Before | Injured eye unsuccessfully operated on soon after accident |
| 12 | 1934 | 13 | ,, | | | ,, | Not known | Some months | Not known | Not known | No information as to whether injured eye removed or not |
| 13 | 1935 | 15 | Rural | | | ,, | Within a week | 3½ months | 3½ months | Immed. after | Full course of N.A.B. injections. Later replaced by milk injections. Still under observation |
| 14 | Not known (now 15) | | Urban | Yes | | ,, | Not known | Quite soon | Not known | Not known | No information as to whether injured eye removed or not |
| 15 | 1936 | 11 | Rural | Not known | | | | Not more than 1 year | ,, ,, | Before—about 1 month | |
| 16 | 1930 | 7 | ,, | Not known | | | | Soon after removal of injured eye | Soon after accident | Before | |
| 17 | 1930 | 7 | Urban | Yes | | Yes | Same day | 6 weeks | Injured eye not removed. Vision of injured eye now −5.50 Sphere 6/18 | | |
| 18 | 1928 | 5 | ,, | ,, | | ,, | Immediately | Within 2 weeks | 2 weeks approx. | After | Mother would not give consent to removal of injured eye until father returned from sea—2 weeks after |

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## CONSIDERATIONS FROM CROYDON

The report on the outbreak of typhoid fever at Croydon by Mr. Harold L. Murphy, K.C., appointed by the Minister of Health to inquire into the outbreak with the assistance of Sir Humphry Rolleston and Mr. H. J. F. Gourley as assessors, was published on Monday, and a full summary of it appears at another page in this issue. As has long been known, the outbreak was the result of infection of the public water supply by the typhoid bacillus, and the circumstances point strongly in the direction that the well was infected by a workman who was a typhoid carrier working in the Addington well between the end of September and during October. During large parts of this period water from the well was being pumped to supply, unfiltered and unchlorinated. In the report stress is laid upon the "misunderstanding and lack of communication between the responsible officers of the Corporation in connexion with the work." Dr. O. M. Holden, the medical officer of health, had not been informed that the work was being carried out at the Addington well, nor that filtration and chlorination had ceased. He was not asked to examine the men chosen for working at the well. Mr. Murphy in his report states: "I have been told that they were carefully selected for physical fitness out of a very large number of volunteers. I am unable to accept this evidence." The report concurs with the opinion expressed by counsel in describing Dr. Holden as a "loyal, able, and industrious servant of the Corporation as well as a truthful and careful witness." Praise is given to the hospital and nursing arrangements and the medical conduct of the epidemic. Mr. Murphy states: "It appears to me that the only legitimate criticism that can be directed to Dr. Holden in this case is a slight delay in his realization that 'water' was or might be the cause of the epidemic. . . ." But, "the dates of the various cases render it unlikely that any infection was caused by this short delay. . . ."

Certain considerations arise from these events in Croydon which are of importance to the public, the medical profession, and, more intimately, to local authorities and their officers. Many of the functions of local authorities, although they have a bearing on the public health, are not of such a character that they call for frequent medical intervention. To such belong, for instance, the provision and management of sewers and drains, the disposal of refuse, the construction of buildings in which human beings live and work, the acquisition and control of parks and open spaces, the control of animal diseases, the arrangement of hours of work and play for school children—both at school and at home—and for their supplementary feeding. The list of examples could be extended almost indefinitely. On each of these activities the influence of expert medical opinion ought to be felt; on some its exercise should be more direct than on others, but of none could it reasonably be contended that a medical officer should be in day-to-day control. Water supplies are in this category. When a reliable source has been found, the method of treatment adopted for ensuring the delivery of a pure supply to the consumer, and a system of tests of the efficiency of these measures devised, the very large business of management requires mainly engineering qualifications of a specialized kind. While this is so, the medical officer of health may reasonably be thought to have some concern with a service that is of such vital importance to the health of the people. The Sanitary Officers (Outside London) Regulations require him to "inform himself as far as practicable respecting all matters affecting or likely to affect the public health." At the end of each year he is required by the Minister to furnish specified particulars about the water supply, including a statement as to whether it has been satisfactory in quality and quantity. Whatever legal interpretation may be put on these Regulations, he may properly make up his mind as to the suitability of the source of water, the efficacy of its treatment, and the frequency and adequacy of the bacteriological and chemical tests applied. Even if he finds it unnecessary to take samples through his own department the reports of any routine and special tests made should pass through his hands. It may be noted that the Regulations make it his duty not to advise but to "be prepared to advise" the council on any such matter, a form of words suggesting rather that the council should seek his advice than that he should proffer it. But the public is not likely to have much patience with such refinements of interpretation. As a matter of courtesy a medical officer of health will prefer to make his representations through the officer in charge of the water department, and the committee to which the latter is responsible. Administration is most successful when there is constant, friendly contact between the heads of departments, each acknowledging the duties and difficulties of the other, but it ought to be made clear, if there is any doubt, that the medical officer of health may take his dissatisfaction to the public health com-

mittee or to the council direct if there is no other remedy for a state of affairs involving risks to the public health. If intrusions of this character are unwelcome to the council he is to some extent protected from reprisals by his exceptional security of tenure.

Every local authority should make satisfactory arrangements for the laboratory examination of samples of water, and it would appear to be desirable that the Ministry of Health should give detailed guidance as to the nature of the examinations and the frequency of sampling. The long experience of the Metropolitan Water Board indicates that changes take place so suddenly in the quality of water from wells in the chalk that some bacteriological examination should be made daily, at least in periods of drought and on succeeding heavy rainfall. In matters of this kind, involving increase of expenditure, the initiative or support of the medical officer of health is of paramount importance. He is certain to be asked in future if all employees likely to come in contact with water should be examined for the detection of the carrier state. If these workers are in comparatively stable employment the initial examination of new employees may be a practicable undertaking, although it would be idle to pretend that negative findings from examinations of an extent which would be tolerated would give a 100 per cent. guarantee of safety; and the maintenance of a probably non-infective state of the employees can be promised by the health department only if full and prompt information, including medical certificates, will be furnished to it of all intercurrent illnesses of these workers.

In connexion with the Croydon inquiry alleged defects in the relations between health departments and the local members of the medical profession have received a good deal of publicity. Mr. Murphy in his report accepts the view that "in all large areas there should be some committee representing all the local practitioners, which, upon the occurrence of any outbreak, would be in constant and close touch with the medical officer of health and would provide the means of pooling and distributing all the information available from time to time as to symptoms and possible causes." It is clear that where no recognition of the local Division of the British Medical Association or any other medical committee has been extended by the authority the occasion of a sudden epidemic is unfavourable for the improvisation of such a form of contact by harassed officials. Communication from the health department by letter is more expeditious and more certain. The discovery of an epidemic in the Press, however unsatisfactory it may be, should not be regarded as an offence to the profession. It is impossible to prevent the daily newspapers from giving publicity to occurrences they regard as news, often before a well-informed medical officer is satisfied that anything has happened which it is necessary to convey to his medical colleagues. Press publicity, too, is much more rapid than conference or even correspondence, and is not restricted by any exaggerated sense of responsibility. But much of the feeling engendered by such events would be avoided if a local medical committee, preferably recognized by statute, were available to confer with the medical officer of health, to receive a frank statement of his problems, and to take the burden of local medical uneasiness and the interchange of information and opinions off his shoulders at a time when his attention must be devoted to practical inquiries of a more specialized kind. The public are less likely to be captious in their criticism if they know that all or the majority of their family doctors are behind the measures taken by the health department and are satisfied that the difficulties of such an emergency are being overcome with the minimum of delay. The profession should understand that in offering their active assistance they will be undertaking no light task at a time when the demand for their ordinary services may be abnormal.

## PSYCHOLOGY DOWN THE AGES

Professor Charles Spearman, drawing upon his ripe experience, has endeavoured in a recent work[1] to steer a clear course among the warring sects who all claim that they represent the whole truth and nothing but the truth in psychology, and to expound how far scientific psychology has really made progress. The origins of psychology in the conception of the spirit or geist are described, and then the various efforts on the one hand to attach psychology to physiology and on the other hand to detach it from bodily conceptions. Further, the relation of psychology to the various philosophical theories is discussed and how far it can progress independently of these. The methods of psychology still depend to a large extent, as they did in the time of Aristotle, on the study of sense perception. "Intelligence," which held the field for so many ages, has lately fallen from favour, though the establishment of tests has made some think they know all about this difficulty. Professor Spearman does not share that view, and, while regarding tests as useful, utters a warning against a too facile acceptance of their implications.

Attention, whose definition has been so variable, seems now to combine an intellectual connotation

[1] *Psychology Down the Ages*. By C. Spearman, Ph.D., Hon. LL.D., F.R.S. Two volumes. Macmillan and Co., Ltd. (30s. both volumes.)

with something of Stoic dynamism. This leads to a consideration of sense perception which may be contrasted with intellect, each having been credited with the primary role in psychic function. Memory and imagination are also faculties which have been much discussed, and it is not yet determined how far these are able to influence a number of other manifestations. Much work has been done in attempting to arrange and classify the feelings and emotions of men, but the result is still indeterminate. Professor Spearman discusses the criticisms of "faculty psychology," and, while admitting that the view that the psyche is made up of a number of fundamental faculties leads us into great difficulties, he argues that the abandoning of such faculties has produced a confusion which is little short of chaotic. He then describes his own analysis of sensory perception and lays stress on the importance of relation and forms. He points out that several important constituents may be discovered which are not recognized by "common sense." In this connexion we have to consider not only the objective matter which is regarded but also the subjective method of regarding; and thence we pass to a consideration of thought and how it is achieved. In present-day psychology this study has been rather neglected. Orexis, or the drive behind action, involving as it does feeling and choice and resolve, is reviewed from the scientific angle. The question of the analysis of emotion and the true nature of pleasure is still unanswered, and consequently the attempt to synthesize units of behaviour must remain difficult and complex, though fascinating. All these problems have exercised psychologists from the earliest times, but we now find in the unconscious mind an entirely new study which, though still in a state of confusion, may be very highly important. The problem of I and Me has always exercised philosophers, but the methods of experimental psychology are beginning to throw light on this also; it would appear that the concept of mental unity cannot be upheld, and this leads Professor Spearman to condemn the thesis of the Gestalt school. The history of psychology is not one of continued progress; there have been, and no doubt will be, many false starts and false conclusions.

Opinion has differed much on whether psychology can establish scientific laws or even whether any are necessary. What pass to-day for psychological laws may not be very exact, but several of those enunciated on general lines have received more or less firm acceptance. The best known is perhaps the law of association, which has been very helpful in the advancement of psychology. So have the law of retentivity and the theory of dispositions—closely associated with mental inertia and resistance to change, which, so to speak, keeps the mental processes on the rails. That the individual can exert control over thoughts, feelings, and actions seems obvious enough, but the explanation is far from precise, though a beginning has been made. The control depends very largely on attention, and a study of it suggests that there is a limit to this power, but that the output is constant in any individual. Fatigue is of the greatest importance psychologically and a good deal has been done in defining the operations and effects of this factor. Some of the "laws" in relation to knowing, feeling, and acting are obvious to common sense, while others are scarcely delineated so far, but the author foreshadows certain advances in these fields, as in the matter of body–mind relationships, which may do much to clarify the issue. If the modern "type-psychology" is closely examined it appears very spectacular, but whether it has any surer foundations than the old "faculty psychology" may be doubted. Professor Spearman believes that if we are to get at the basis of "what goes with what" we must study correlation coefficients, and it was by this method that he worked out the G and S factors, which will always be associated with his name. He regards this as the most important advance in the modern psychology, especially if G proves to be innate. The statistical method is being extended to an inquiry into oretic (affective-conative) factors, and this holds out great promise, so much so that he clearly believes that as a method of study it will eventually displace all others in psychology. As a history of psychological thought leading up to this method his survey is full of interest, and, since close observation of the individual reactions to life is becoming increasingly important in many branches of medicine, it is well worthy of the attention of our profession.

## ADMINISTRATION OF HORMONES

The fundamental aim of endocrine therapy is to obtain a relatively lasting action of suitable concentrations of the hormone extract on the effector organ. Experience shows that administration of the pure hormone by injection, particularly if in aqueous solution, merely produces a transient rise in its concentration in the blood stream, so that its effect is evanescent. Thus in order to activate the organ concerned injections must be repeated at frequent intervals, and even then there is no maintenance of a steady level of activity but rather the periodic delivery of the hormone to the effector organ in a series of concentration peaks, the greater part being rapidly excreted from the body. In these circumstances it is difficult to decide upon a physiological dose, for the organ is never submitted to the effects of a constant dose. Apart from these considerations the practical inconvenience of multiple injections is obvious. In an article in the present issue

of the *Journal* Dr. A. S. Parkes discusses the recent experimental work which has been undertaken to achieve constancy of delivery of the hormone administered. Oral application and local inunction have the advantage of dispensing with the inconvenience of injection, but unfortunately neither of these routes is applicable except to two hormones, thyroid and oestrin, and to the latter only in a limited degree. Fortunately there are certain clinical indications for the use of oestrin which require only very low concentrations, such as the menopausal syndrome, for which oral administration of oestrone or oestriol is effective, the latter being more completely absorbed from the intestine on account of its greater solubility in the body fluids. Inunction of oestrin, though effective, has few indications. Oral administration of thyroid is of course highly satisfactory. Anterior pituitary hormones, contrary to the views expressed by many authorities, are completely ineffective by mouth. Dr. Parkes is more especially concerned with the form in which the sex hormones are most suitably prepared for intramuscular injection. The chief object has been to combine the pure hormone with some ester which will decrease its solubility in the body fluids and therefore render its absorption from the site of injection more gradual. For the oestrogenic hormones the benzoate appears to be the most suitable vehicle, and if administered in the form of oestradiol benzoate the effect of each injection lasts for about three days. The male hormone, testosterone, appears to retain its effect for about a week if given in the form of the propionate. Unfortunately progesterone is difficult to esterify, and though the duration of activity of the pure hormone may be longer than in the case of the other sex hormones it is probably advisable to give injections daily or even twice daily, especially in such cases of emergency as threatened abortion. The greatest advance towards the solution of the problem, however, is Dr. Parkes's own observation that if pure crystals of the hormone are tightly compressed into the form of a tablet and this is then implanted subcutaneously the duration of activity is greatly prolonged owing to very slow absorption of active material from the surface of the tablet. This observation demands the closest attention of the clinical endocrinologist, and is indeed already being put to practical trial in at least one endocrine clinic in this country. The application of this method to crystalline oestrone for the menopausal syndrome, to progesterone for habitual abortion, or to testosterone for prostatic hypertrophy opens up a promising avenue for clinical research.

## A SURVEY OF CHRONIC RHEUMATIC DISEASES

In 1938 the National Hospital for Rheumatic Diseases, Bath, celebrates the bicentenary of its foundation. To mark this event an international conference on certain aspects of rheumatic diseases will be held at Bath, as has already been announced in our columns, but in addition a volume, to be entitled *A Survey of Chronic Rheumatic Diseases*, will be published by the Oxford Medical Publications Ltd. This will comprise a series of articles on the chief aspects of rheumatism and gout arranged and edited by an editorial committee, under the chairmanship of Dr. R. G. Gordon, which was appointed by those responsible for arranging the bicentenary celebrations. The committee has been fortunate in obtaining articles from such eminent authorities, among others, as Sir Humphry Rolleston, Drs. Buckley, Copeman, Douthwaite, Edgecombe, Glover, Poynton, and Thomson in this country; Professors Ghormley, Hench, Osgood, and Pemberton from America; and Professors Aschoff and Besançon, and Drs. Freund, Kahlmeter, van Breemen, and Weil from the Continent of Europe. Various schools of thought are thus well represented, and it is hoped that the volume will be an interesting and valuable addition to rheumatological literature, and prove a worthy memorial to the past traditions of the hospital and an earnest of future contributions to the advancement of the special studies with which it is concerned.

## EXCISION OF THE PATELLA

Sixty years ago Lister put his faith in the value of the antiseptic method to a supreme test by performing an open operation on a fractured patella.[1] The fragments were wired together and there was no unfavourable reaction after the operation. Since those days surgeons' efforts have been directed to improving the technique of this now widely accepted treatment by internal fixation, for the functional results after wiring of the patella have been by no means uniformly satisfactory. Last year Mr. Ralph Brooke[2] showed a number of patients at a clinical meeting of the Orthopaedic Section of the Royal Society of Medicine—patients with fractured patellae that had been dealt with by excision. The results were astonishing. In almost every case normal function had been restored, and apart from the scar of operation and the absence of the knee-cap it was impossible to distinguish the damaged from the normal joint. It would appear that this cherished bone, the patella, is superfluous; or at all events, if the bone is broken, it is best to get rid of it. On another page Mr. G. O. Tippett has reported satisfactory results in six cases treated by this operation, four of fracture and two of osteo-arthritis in which the patella was particularly involved. This is all excellent, but we cannot help feeling that this new form of treatment, which has made such a promising start, may come to grief if practised by any and every one who calls himself a surgeon. It sounds, and is, so easy for a man who is accustomed to performing open operations on joints. But the knee-joint, and particularly a clean one, must be approached with a technique that might almost be described as reverential. A slip may be followed by swift disaster in the shape of intra-articular haemorrhage or infection. Then, too, in this particular case, it is important to restore the integrity of the extensor mechanism by careful suturing of the torn capsule. Last, or perhaps first, there is the choice of the appropriate case. A warning that mistakes may be made in this direction appears in our correspondence columns this week, at page 418,

[1] *British Medical Journal*, 1877, **2**, 850.
[2] *Brit. J. Surg.*, 1937, **24**, 733.

in a letter from Mr. Jackson Burrows. In two cases he has seen, excision of the patella for recurrent dislocation was an unqualified failure. Mr. Tippett has given a good summary of the indications for excision, but one of them is "congenitally displacing patellae." If by this he means recurrent dislocation of the patella dating from early in life, then it would have been wise to support this recommendation with reports of cases treated successfully by excision of the patella. In the light of Mr. Burrows's warning we cannot accept recurrent dislocation as an indication for excision. It is to be hoped that this very definite advance in the treatment of lesions of the patella will be received with the caution and respect that it deserves.

## AN INTERNATIONAL PHARMACOPOEIA

With a view to the international unification of pharmacopoeias, the Health Committee of the League of Nations has decided to appoint a Technical Commission of Pharmacopoeial Experts. This recommendation was approved by the Council of the League of Nations at its January meeting. The following have been invited to constitute the commission: Dr. C. H. Hampshire, London (Chairman); Professor H. Baggesgaard, Copenhagen; Professor V. E. Zunz, Brussels; Professor M. Tiffeneau, Paris; Professor R. Eder, Zürich; Professor L. van Itallie, Leyden; Professor E. Fullerton Cook, Philadelphia; and a member of the Union of Soviet Socialist Republics. The work of this commission will be, in the first place, to prepare a programme of studies, including the selection of suitable drugs for examination and the determination of a uniform method of analysis, assay, and preparation of the drugs selected. The technical examination will then be distributed among a number of national pharmacopoeia commissions. It is intended that the results of the studies thus carried out with the co-operation of the various national pharmacopoeia commissions shall take the form of a series of monographs on the different drugs. These monographs would be forwarded to the permanent secretariat in Brussels for circulation among the parties to the International Agreement for the Unification of Pharmacopoeial Formulas for Potent Drugs of 1929, with a view to their being adopted and eventually embodied in an international pharmacopoeia of powerful remedies.

## RESEARCH INTO DENTAL CARIES

Lady Mellanby's pioneer work on the influence of diet on caries in children's teeth showed clearly that a relatively high vitamin D content of the food can do much to diminish the incidence of caries, particularly if given during the development of the teeth. It can even delay the onset and spread of caries if it is given after the teeth have erupted. Moreover, when the supply of vitamin D was inadequate different cereals were found to have an anti-calcifying influence on the teeth in different degrees, oats being the worst cereal in this respect and white flour and rice being the least harmful. Osborn and his co-workers[1] are fully convinced that some teeth decay because they are poorly made or because they are weakened from within through some severe disorganization of the calcium and phosphorus metabolism of the individual, owing to lack of vitamin D or to some other factor. But they are equally convinced that some teeth decay because their exposed surfaces are attacked by acid-producing bacteria. This was demonstrated by carefully controlled *in vitro* experiments. Undecayed normal teeth were obtained from patients who had been advised to have multiple extractions, and the teeth were divided into groups as much alike as possible. Each group was immersed in a preparation made of the substance under examination, which had been held in the mouth of one of the workers for two minutes and well mixed with saliva. In one experiment the influence of crude sugar-cane juice and saliva was compared with that of pure sucrose and saliva, the control being a mixture of saline and saliva. In further experiments whole wheat meal and white flour, whole mealie meal and highly refined mealie meal (60 to 70 per cent.), and whole mealie meal and 90 per cent. extraction mealie meal were respectively compared, the same control of saline and saliva being used in each experiment. In every instance it was found that the teeth in the refined material decayed more than those in the unrefined, and those in the unrefined more than those in the saline. It was therefore concluded that the crude carbohydrates have associated with them some "protective agent" which tends to inhibit their injurious action on the teeth. Osborn and Norisken[2] have recently made a second investigation of the diet of the South African Bantu in an attempt to discover why civilization brings decay to Bantu teeth. Young males of 15 to 25 years of age who had not worked in towns or in mines (that is, had not come too much under European influence) were questioned as to their diet. With the possible exception of sweet potatoes no correlation was found between any item of the native diet and the incidence of caries. It was, however, evident that machine-ground mealie meal, white bread, and refined sugar were associated with caries, and it is suggested on the strength of this evidence and the experimental work described above that sugar cane and/or wheat are accompanied by a "protective agent" which is removed in the refining processes. By disturbing the calcium–phosphorus ratio in the blood, by whatever mechanism, Blackberg and Berke[3] induced a pathological condition of the pulp of the teeth which was followed much later by visible lesions in the enamel. Repeated injections of small doses of parathormone into rats whose diet contained calcium and phosphorus in either a very high or a very low ratio brought about a more definite development of caries than was found in the uninjected controls. In animals fed on a complete diet the pathology produced by parathormone was most obvious. Bödecker and Ewen[4] have investigated the problem presented by unilateral dental caries, which is defined as the occurrence of caries on the proximal

[1] *J. dent. Res.*, 1937, **16**, 165.

[2] *J. dent. Res.*, 1937, **16**, 431.
[3] Ibid., 191.
[4] Ibid., 401.

surface of one tooth while the surface of the tooth next to it is unaffected. They found 179 such lesions in 516 "full-mouth" *x*-ray films selected at random. Obviously food fermentation, bacteria, and possibly some obscure changes in the composition of the saliva cannot account for the development of unilateral caries. An analysis of the possible variations in the environment of the teeth—for example, the presence of a bacterial plaque on the affected tooth only, the retention of a carious deciduous tooth next to the adjoining permanent tooth, etc.—has failed to account for most of the cases observed. Variations in resistance most probably therefore explain the observed variation in the incidence of caries in different teeth. From the "Dental Survey of School Children" published by the United States Public Health Service (Bull. 226) Mills[5] has made the following observations: (1) The incidence of caries in American school children increases steadily throughout the United States as the distance from the Tropics increases. (2) There are indications of diminishing incidence of caries as one passes from the mouth of a river toward its head waters. (3) There is an inverse relation between hardness of drinking water and incidence of caries, cities using river water showing about 30 per cent. more caries than do cities using well water. (4) There is a direct relation between incidence of caries and the amount of salt employed in seasoning food. (5) Negro children in all areas have less caries than do the white, but the same regional relations obtain. The observations show that dental decay bears certain definite relations to extrinsic factors which in one way or another influence the metabolic processes of the teeth.

## DR. WU LIEN-TEH

After thirty years of continuous and faithful service under the Chinese Government Dr. Wu Lien-Teh, first Director of the National Quarantine Service, and also of the Manchurian Plague Prevention Service, has retired from his official duties. Dr. Wu (or G. L. Tuck as we knew him in this country) was born in the island of Penang, Straits Settlements, in 1879, and studied medicine at Emmanuel College, Cambridge, and St. Mary's Hospital, London, graduating in medicine in 1902, after a distinguished student career. His thesis for the Cambridge M.D. in 1903 described the results of an investigation on tetanus. He then engaged in research on malaria and other tropical diseases under Sir Ronald Ross at the Liverpool School of Tropical Medicine, under Professor Karl Fraenkel at Halle, and under Professor Metchnikoff at the Pasteur Institute, Paris. Some months at the Institute for Medical Research, Kuala Lumpur, were followed by three years of private practice in Penang. In 1910 the Manchurian Imperial Government sent Dr. Wu to Harbin to control the serious outbreak of pneumonic plague, and largely through his organizing ability the epidemic was suppressed within three months. In recognition of this work he was elected president of the international plague conference at Mukden in 1911. Since then he has held positions of high responsibility under the National Government in China, having been appointed in 1930 as chief technical expert of the Ministry of Health, and director-general of the National Quarantine Service based at Shanghai, while still retaining charge of the North Manchurian Plague Prevention Service, for which he was chosen in 1912. Dr. Wu has made many contributions to medical literature, chiefly on plague and cholera, and he is part-author, with K. C. Wong, of a history of Chinese medicine. He was a founder and president of the Chinese National Medical Association and for fifteen years edited the *National Medical Journal* (now enlarged into the *Chinese Medical Journal*).

[5] *J. dent. Res.*, 1937, **16**, 417.

## A MERE FLEA-BITE

In 1916 the late James Waterston published as No. 3 of the British Museum (Natural History) Economic Series a very readable pamphlet on *Fleas as a Menace to Man and Domestic Animals: Their Life-History, Habits and Control.* A second edition appeared in 1920, and now it is followed by a third (price 4d.) revised by Professor P. A. Buxton. During the past sixteen years much has been added to our knowledge of fleas, their behaviour and their importance; and in revising the pamphlet Professor Buxton has taken note of new work and placed his special experience at the disposal of the Trustees. The medical bearings of the subject are well and briefly stated in the introduction: "Against the flea a clear and damaging case has been made out. Fleas are known to transmit the bacillus of bubonic plague, from which there were upwards of 7,000,000 deaths between 1896 and 1911 in India alone. Fleas are also concerned in the transmission of certain types of 'endemic typhus,' a disease of human beings in several tropical countries. A flea also acts as the intermediate host of a tapeworm found, in the adult state, in both dog and man; much loss is annually caused to poultry rearers in the tropics and certain portions of the United States by the drain on the health of their stock due to a sedentary flea, while a closely allied species attacks man, causing painful sores or even crippling if neglected. Such an indictment, apart altogether from the pain of flea-bites, with their subsequent swelling, and the discomfort caused to sensitive skins by the insect's movements, more than justifies the attention now given to this group of parasites." As Swift wrote, though in a different context: "So naturalists observe a flea." Having accurately observed its habits and life-history, and its powers for evil, the entomologist can tell us means for its control. Banish or cleanse the flea's hosts, he says, and destroy its breeding centres. All floors should be thoroughly washed and all cracks filled. Naphthalene is perhaps the most useful agent for fighting fleas in dwelling-houses.

Professor Simon Flexner, M.D., formerly Director of the Rockefeller Institute for Medical Research, will give a public lecture, on epidemic poliomyelitis and epidemic encephalitis, in the Physiological Department of the University of Cambridge on Monday next, February 21, at 5 p.m.

# SURGICAL PROCEDURES IN GENERAL PRACTICE

*This is one of a series of articles contributed by invitation*

## TREATMENT OF BOILS AND CARBUNCLES

BY

**JOHN HOSFORD, M.S., F.R.C.S.**

Both boils and carbuncles are localized staphylococcal lesions involving the skin and subcutaneous tissues. A septicaemia is very uncommon, though a toxaemia is often seen, and in a consideration of the treatment not only must the local lesion be attended to but so must the general condition of the patient.

### Boils

A boil often arises as the result of some irritating pressure on an unclean skin area in a person who, for some reason, is run down. The back of the neck is the commonest site, and the collar frequently has some aetiological importance. The treatment of an early boil in this position or elsewhere consists in removing the irritating pressure—such as from collar or braces—and covering the boil with two or three layers of elastoplast. The latter acts by protecting the boil from being rubbed and, what is more important, by splinting the inflamed area. Complete rest to an inflamed area is one of the elementary principles of therapy, but in the case of minor inflammatory lesions it is often forgotten. Collodion painted on to a boil and allowed to harden has been recommended, but it is not as good a splint as elastoplast. A circular piece of elastoplast a little larger than the boil is cut: in an average case this will be the size of a halfpenny, and it is stretched out and stuck on so that it covers the whole boil. A circle of elastoplast the size of a penny is then put on over this. A striking and immediate reduction in the pain follows, and in many cases the swelling quickly subsides and the boil disappears in an almost miraculous manner. If the boil begins to discharge a piece of elastoplast with a small hole in its centre, through which the pus may escape, is substituted for the first piece: this may be changed as it gets soiled. Thus treated the boil is likely to clear up and heal without leaving a scar.

With larger boils a decision has to be made as to whether operation is necessary and, if so, when it should be done. In the case of even a large boil early intervention is not advised. The contents are not so much pus as a core, or slough, which is a portion of dead tissue. Until the slough has separated operation should not be carried out, as the main object of operation is to remove the core and not to evacuate pus. The right moment for this is a matter of judgment, and until operation is necessary the best treatment for a large boil is to splint a wide area around it with several layers of elastoplast, leaving the whole boil exposed in the centre. This is covered with a thick layer of magnesium sulphate paste, over which are put several layers of gauze, wool, and a bandage. With this treatment a boil which at first may seem to require operation may recover without it. The magnesium sulphate paste has the following formula:

| | |
|---|---|
| Exsiccated magnesium sulphate ... ... | 2 parts |
| Glycerin (by weight) ... ... ... | 1 part |

It is much more efficacious when freshly prepared. When the paste is first applied it is rather painful, and it will be necessary to prescribe aspirin, veganin, or other suitable drugs for relief. When a boil requires operation a crucial incision under an anaesthetic (preferably gas or evipan) is made and the slough picked out with a pair of forceps. The edges of skin need not be cut away, and the tissues should not on any account be curetted or scraped. If the core is removed there is an almost immediate relief of pain, and healing is rapid and leaves very little scar.

Fomentations are rarely indicated, and are usually undesirable: if they are employed crops of small boils and pustules are likely to arise in the surrounding skin. If as the result of injudicious treatment or for any other reason fomentations seem to be indicated, the skin around the boil should be carefully but gently cleansed with ether and covered with ung. hydrarg. nit. dil. These precautions will prevent infection with staphylococci, and thus avoid further boils and pustules.

In cases of multiple boils, in addition to the treatment already outlined, local and general ultra-violet light may sometimes be used with advantage. It is important that the patient should have not only physical but also mental rest. It is striking how often a number of boils appear when a patient is worried or mentally overworked. The taking of yeast and various vitamins has been recommended, and injections of collosol manganese and other substances have their advocates, but the exact value of these measures is doubtful. Vaccines, autogenous if possible, may be used; but here again their value is doubtful, and the best and often the only way to get a crop of boils to disappear is to enforce absolute rest, a complete change of air, and scrupulous though not vigorous cleansing of the affected parts.

### Carbuncles

Carbuncles have many points in common with boils, but they are, of course, much more dangerous. A facial carbuncle is a most serious lesion, and if not carefully treated is likely to prove fatal as the result of infection travelling by way of the facial vein or pterygoid plexus and causing cavernous sinus thrombosis.

A great variety of treatments have been employed for carbuncles, but the general tendency in recent years has been towards conservatism. In the past, and in the hands of some surgeons still, excision of the whole carbuncle is the method of choice, but this is not advised. Except in the case of small carbuncles, the patient should be put to bed, encouraged to drink increased quantities of fluid, and the bowels should be made to act regularly (though overpurging is to be avoided). It is important, particularly with underfed patients, that they should eat an adequate amount of nourishing food, and to aid this bitters or alcohol may be necessary. It is essential in all cases of carbuncle to test the urine, particularly for sugar. Diabetics are more likely to suffer badly with carbuncles: when they have any inflammatory condition the amount of glycosuria is likely to be increased, and until this is properly attended to by diet and insulin recovery of the carbuncle will be delayed. The use of

vaccines and sera in the treatment of carbuncles has not found much favour, but Ovens reports good results following the injection of anti-staphylococcal serum intramuscularly.

The local treatment of the carbuncle consists in applying a 12 per cent. solution of sodium sulphate. This is less painful and more easily applied than magnesium sulphate paste, and also less painful and more efficient than hypertonic saline, which is sometimes used. The solution of sodium sulphate is warmed to body temperature and several pieces of gauze (fluffed up, not evenly folded) are soaked in it and put on the carbuncle. They are covered with a piece of jaconet, over which is put an ample covering of wool, and are then fixed firmly, but not tightly, with a bandage. This warm sodium sulphate pack should be changed two-hourly throughout the day and once or twice at night if the patient is awake. In the early stages of a carbuncle there is often much pain, and this must be controlled adequately with drugs, as sleep and rest are essential. If morphine is necessary it should be given. With this treatment nearly all carbuncles will remain local: pus and slough will be discharged, and healing will be as quick as, if not quicker than, if an excision had been made and scar tissue will be less. An anaesthetic is avoided; this is sometimes important, because carbuncular subjects are often unsuitable for anaesthetics. In a few cases, when the carbuncle seems deep and is very slow in starting to discharge, two clean crucial incisions may be made into it. These should not extend into the surrounding unaffected tissues. Following the incisions treatment with sodium sulphate packs should be continued, and the infected necrotic tissue will soon begin to come away freely. When this pack treatment is carried out, either with or without crucial incisions, the whole carbuncle gradually discharges itself, usually with the loss of some skin, and a clean granulating wound is left. The sodium sulphate dressings should be continued until all dead tissue has separated. Healing is now rapid, and a dressing of gauze covered with sterile vaseline is applied, being changed once in every three days. The scar that is left is much less conspicuous and ugly than when a complete excision of a carbuncle has been carried out.

Another and entirely different treatment which has met with a considerable measure of success in the last few years is by short-wave diathermy. Its disadvantage is that the necessary apparatus is not everywhere available. The carbuncle is covered with a layer of gauze, and one of the electrodes from the diathermy machine is put over this but is separated from it by a layer of felt. If the carbuncle is on the back of the neck the other electrode is put either on the forehead or on the front of the neck. When the current is turned on the patient gets a comfortable feeling of warmth in the neck; this treatment is continued for ten to fifteen minutes. Great relief is often experienced even after the first application, the effect of which seems to be to make the carbuncle clear up more quickly. The diathermy should be given daily until the discharge of dead tissue occurs freely. During the days when this treatment is being given, and afterwards, the sodium sulphate packs may be put on with advantage.

### Facial Carbuncles

These require special mention owing to their very grave prognosis. Carbuncles on the face are likely to be followed by cavernous sinus thrombosis (an invariably fatal condition), particularly if they are squeezed or scraped or cut. Even a small facial carbuncle must be treated seriously from the beginning and the patient put to bed. The lesion should be touched and handled as little as possible: that part of the face on which it is situated should be immobilized by covering a wide area around it with elastoplast, the carbuncle itself being left exposed. Further, to obviate movement of the part the patient should not be allowed to talk, and only fluids should be given. If the carbuncle is near the lips all drinking should be through a straw. It should be bathed every two hours with hot 12 per cent. sodium sulphate solution for half an hour at a time. This is best carried out by holding the face over a basin of the very hot solution and keeping the part really hot by holding a large pad of absorbent cotton-wool, soaked in the solution, gently against the carbuncle for a minute or two at a time.

On no account must any incision be made into a carbuncle on the face, and all hands wanting to squeeze it must be held back. All sloughs should be allowed to separate by themselves, or at the most should be gently bathed away. Incisions into or excision of facial carbuncles are likely, even if they do not cause cavernous sinus thrombosis, to leave unsightly scars, and such deformities as ectropion or a distorted mouth.

### Spreading Carbuncles

Certain carbuncles do not remain localized but continue to spread, sometimes at an alarming rate. This as a rule occurs in patients who are especially debilitated either from diabetes or some other cause. When adequate general measures and the local treatments described above are carried out a carbuncle usually soon ceases to spread; but if this is not the case further steps may be required. There are two alternatives—either injection of blood into the surrounding tissues or excision of the carbuncle. The former is less drastic; but although it may not be quite as effective it is worth trying. About half a cubic centimetre of a strong solution of sodium citrate (25 per cent.) is drawn into a 20-c.cm. syringe, which is then filled with blood from the patient's vein. This is injected at a number of points of puncture about an inch apart around the carbuncle, outside the indurated area. About 5 c.cm. are injected at each place, deep down near the core of the lesion. Fifty or sixty cubic centimetres of blood may be required in all.

If the injection of blood does not stop the carbuncle spreading, the latter should be excised. Ideally the whole carbuncle should be excised, but in the case of a very large one, when only one edge is spreading, it may be sufficient to excise that part alone, as excision of the whole lesion is such a severe operation. When a carbuncle is excised healthy tissues just beyond the edge should be cut through and the incision carried deep enough to get underneath the carbuncle, removing all infected tissue. After excision the wound is packed with gauze wrung out of flavine (1 in 1,000), so as to control the bleeding.

### Carbuncle in Diabetics

Carbuncles have a worse prognosis when they occur in diabetics. It should be remembered that in some cases a carbuncle may have an accompanying glycosuria which is not due to true diabetes. It is essential to get the diabetes under control as soon as possible, and to this end it is advisable to obtain the help of an expert in this disease, as in the presence of severe infections diabetes may be very difficult to control with insulin. In diabetics, owing to the grave prognosis and their poor powers of resisting infection, it is usually inadvisable to try conservative treatment with sodium sulphate packs, for if time is wasted the case may easily and quickly get out of

hand. Instead, complete excision should be carried out while the carbuncle is still small. If this is done and the diabetes is got under control immediately, the result is satisfactory, but no time must be lost.

### Complications of Carbuncles

One cannot leave the subject of treatment of carbuncles without a brief reference to certain complications. Enough has been said about cavernous sinus thrombosis in connexion with carbuncles on the face, and how it is to be avoided. Nothing can be done once the condition is established.

Septicaemia and pyaemia sometimes occur, and may be the cause of a persistent pyrexia when the carbuncle itself appears to be progressing satisfactorily. In some cases the carbuncle may be practically healed, when the temperature rises and there are signs of infection in some other part of the body. A place where this is likely to occur is in the perinephric tissues. An abscess may form here and be easily overlooked as the symptoms are not pronounced, and unless the loin is palpated the condition may not be recognized for several days. Such an abscess, if adequately opened, will heal without leaving any ill effects on the kidney. In one case a very severe metastatic mediastinitis came on when a carbuncle on the neck was quite quiet and almost healed.

## VITAL BALANCE-SHEET OF 1935

### REGISTRAR-GENERAL'S REVIEW

The text volume of the Registrar-General's Statistical Review of England and Wales for 1935[1] contains the official commentary on the two volumes of vital statistics already published—namely, Tables Part I Medical and Tables Part II Civil. The report deals with the statistics of births, deaths, and marriages registered in 1935, the estimates of population, registrations under the Legitimacy Act and the Adoption of Children Act, and with the numbers of parliamentary and local government electors.

### Population Figures

The estimate of the population of England and Wales in the middle of 1935 was 40,645,000 persons, of whom 19,500,000 were males and 21,145,000 females. The total is 178,000, or 0.44 per cent., greater than the estimate for the previous year and 693,000, or 1.7 per cent., greater than the population at the Census of 1931. The figure of 693,000 is made up of the excess of births over deaths, about 493,000, and the balance of migration, 200,000. The average ages of the estimated population are 32.7 years for males and 34.5 for females. These are gradually increasing; in 1931 they were 31.8 and 33.5 respectively, and in 1921 29.9 and 31.2. The marriages registered during 1935 were 349,536 in number.

The live births registered in 1935 were 598,756, or 1,114 more than in 1934. The corresponding birth rate was 14.7 per 1,000 population. A comparison with the rates in many other countries shows that only three of them —Austria, Norway, and Sweden—had lower rates. The number of male births exceeded the number of female births in the ratio of 1,056 to 1,000. The ratio is very inconstant, and may be low in one year and high in another in the same region. Stillbirths formed 4.1 per cent. of the total births registered. The natural increase of population in 1935—that is, the excess of live births over deaths—was 121,355, as compared with 120,832 in 1934 and 83,948 in 1933. The rate is 3 per 1,000 population.

[1] H.M. Stationery Office, price 3s.

### Analysis of Deaths

The report reviews the mortality from various causes during 1935, and also contains several special studies.

*Infant Mortality.*—Comparison of the rates in 1931–5 with those in 1921–5 showed a decline during the ten years ranging from about 5 per cent. for infants under 1 month to 30 per cent. for infants aged 6 to 12 months. Comparing the group of towns whose infant mortality rates in 1935 were 90 per 1,000 live births or over (Bootle, Gateshead, St. Helens, Sunderland, Wigan) with the group of towns with rates below 40 (Bath, Eastbourne, Exeter, Great Yarmouth, Ipswich, Oxford), the causes of death responsible for most of the excess were measles, whooping-cough, bronchitis, pneumonia, and diarrhoea.

*Tuberculosis.*—A study of the decline in tuberculosis mortality since 1851 shows that the mortality of children under 5 from this cause has fallen to about one-ninth of the level of 1851–60, and of children aged 5 to 15 to less than one-fifth. At ages 15 to 25 mortality of men has fallen to one-quarter and of women to less than one-third, and rates at higher ages have declined to less than one-third of their values in 1851–60. The standardized death rate from respiratory tuberculosis was 28 per cent. lower, and from other forms of tuberculosis about 40 per cent. lower, for each sex in 1935 than the average rates for 1921–30. Among English rural areas those of Durham had the highest tuberculosis rates for young adult males and those of Herefordshire had the highest phthisis rate for young adult females, but several of the Welsh counties, notably Caernarvonshire, gave rates in excess of any English county.

*Cancer* mortality at various ages is compared in 1911–20, 1921–30, and 1931–5, and it is pointed out that the recorded mortality from cancer of some parts of the body has continued to increase since 1921–30 at advanced ages although it has become stationary or begun to decline in middle age, and it seems necessary to conclude that the average age of appearance of cancer in some of these organs is becoming later. For a few organs, on the other hand, cancer mortality continues to increase at almost every age.

*Maternal Deaths.*—As a result of special inquiries during 1935 the relation of maternal deaths to the number of previous confinements, or to the occurrence of a twin or stillbirth or abortion, is shown, and the distribution of abortion deaths in each region during 1926–35 is also given.

*Deaths from Poisoning and Violence.*—Classification of the deaths since 1924 due to poisoning shows that in 1933–5, although the suicide rate by the use of solid and liquid poisons had almost ceased to rise, the resort to coal gas for this purpose was still increasing rapidly. Among the poisons which showed important increases since 1930–2 as suicidal agents were the barbiturate drugs, aspirin, and opium derivatives, while the slight increase in accidental deaths from solid and liquid poisons in the same period was more than accounted for by deaths due to barbiturates. In 1935 the cause principally responsible for the excess of mortality among males resident in rural areas over those resident in cities was road transport, other contributory causes being accidents in mines or quarries or by drowning. Female mortality caused by road transport was, in contrast with males, greatest for residents in Greater London. Analysis of the total mortality in 1935 by violence, other than suicide, shows that for children under 5 the advantage of a greater freedom from fatal accident which was enjoyed by the rural child in 1911–20 has almost disappeared, and at the school ages it has been replaced by a greater mortality risk in the rural districts than in the towns. At ages 25 to 55 the female risk, which in 1911–20 was greatest for town dwellers, has become greatest for residents in rural districts, but after 55 a reversal to a large excess of risk for town dwellers occurs. For males the greater risk to rural dwellers persists up to 65 before the reversal takes place.

# Nova et Vetera

## BARTHOLOMEW CLOSE, NEWBURY

In 1925 Dr. Walter Essex Wynter, F.R.C.P., F.R.C.S., then not long retired from the position of senior physician to the Middlesex Hospital, London, began to carry out a project for adapting certain properties which he had purchased on the outskirts of Newbury, Berkshire, as a hostel for retired sisters and nurses of the Middlesex Hospital. Occupation began in 1926, when two cottages built in 1618 and situated just to the north of Dr. Wynter's own house (Bartholomew Manor) were converted unaltered, and two new ones were built just round the corner in Pound Street, adjoining the two old ones already mentioned.

### An Ancient Manor

The history of this ancient manor is of considerable interest. Before the Norman Conquest it was held from the Crown by Ulward the Saxon, and was known as Ulvritone. Nothing more is heard of Ulward, who was quite possibly killed at Senlac; at any rate, his manor was granted by William I to Ernulph de Hesdin, the latter a village in Picardy well known to many of our troops in the Great War. The next holder whose name is recorded was the Earl of Perche, and it was later possessed by the Earl of Pembroke, the Earl Marshal who sided with Matilda against Stephen. This nobleman quarrelled with the Church, and was solemnly cursed; he had five sons who inherited the manor in turn; but all died childless, or at least without male heirs. The Earl is commemorated in the name of Hamstead Marshal, some three or four miles away, where he had one of his strongholds. By 1394 the manor was held by Richard FitzAlan, Earl of Arundel, who was beheaded; and it was subsequently held by the Earl de Bohun and then by Roger and Edmund Mortimer. It passed eventually to Edward IV, whose grandmother was a Mortimer, and was in the next century held by Jane Seymour, her son Edward VI, and the succeeding sovereigns down to Charles I, who granted it to the town of Newbury. Before these royal ownerships a large part of the demesne—about 140 acres—had been given to Sandleford Priory, near Newbury; and when this Priory was dissolved in 1478 the land was handed over to St. George's Chapel, Windsor, whence it was transferred in 1888 to the Ecclesiastical Commissioners.

### Reconstructions

The present manor house, which Dr. Wynter inhabits, was built about 1350, and it still contains much of the original oak timber used in its construction. At some remote date the roof has been raised, and one of the jack rafters has been formed out of an unglazed windowhead: this reconstruction was therefore undertaken probably not later, or not much later, than 1480, and possibly much earlier. In the year 1550 it would seem that the ground floor of the house was in use for the accommodation of farm animals—horses or cattle—for in that year J. H. Winchcombe, son of Jack o' Newbury, altered it to incorporate the ground floor into the dwelling house as it now exists. To house the dispossessed animals he built quite near it, on the south side, a range of buildings—cart shed, stables, and so forth—which by 1670 had come into the possession of Philip Jemmett, an official of the Brewers' Company, who erected the arms of the Company over the porch, where they still are. He divided the building into cubicles and put in chimneys, converting the whole structure into somewhat primitive almshouses. His grandson, Jemmett Raymond, added a new block of almshouses at the opposite side of Argyle Road, which remain in use and in good preservation and are highly picturesque. They are still called Raymond's Buildings. Jemmett's almshouses were not nearly so attractive, though of course much older; and when Dr. Wynter came into possession of them he decided that the low-pitched attic floors were unfit, in their then state, for his purposes. So he took off the roof, raised this story three feet, and then replaced the roof; he also put in more windows. He thus created eight cottages, or more strictly maisonettes, each providing one sitting room, one bedroom, a kitchen, and a bathroom. They were completed in 1929; three of them have the original staircases still intact.

### Wooden Links with Eton

The interior doors of these cottages are made of extremely ancient oak, whose history is worth recounting. About 1840 (or soon after) the authorities of Eton College saw fit to order the removal of the antique shutters from the oldest buildings, which date from the foundation of the College by Henry VI. As these shutters were designed for unglazed windows they were probably made at the same time as the buildings were erected. The builder who carried out this "improvement" retained them in his yard for a number of years and then sold them to a dealer. A medical man later still bought them at Witney for eighteenpence each, intending to use them for some purpose which he then had in mind; but after storing them for many years he found that he no longer required them, and gave them to Dr. Wynter. These shutters, which have the original hinges on them, Dr. Wynter has used for the interior doors of this particular group of his cottages. They are carved all over with the names of old Etonians, many of them members of well-known Etonian families; some of these inscriptions are dated, the earliest 1593 and the latest 1840—the eighteenth century is particularly well represented.

### A Harmonious Scheme

During these reconstructions and alterations Dr. Wynter has steadily refused to use modern bricks and timbers: he buys materials of Elizabethan date, or earlier, when

buildings of that age are demolished, and his restorations and additions are all designed to harmonize with the old buildings. In fact, it is not easy to tell, when looking at an addition to a piece of the old property, where the old work ends and the new work begins. The only finds of any antiquarian interest during the progress of the different works have been an Elizabethan sixpence and a Charles II farthing of 1670—the latter reign was the first in which farthings were minted, so that this represents a very early issue indeed. Four more adjacent cottages, thought to be about two hundred years old, were also purchased by Dr. Wynter, and are in occupation. On the completion of the adaptation of Jemmett's almshouses and their occupation by eight nurses Dr. Wynter projected additional buildings on a site in close vicinity to them to provide quarters for eight more. Here again the planning was carried out in close conformity with the old buildings; and once more care was taken to use none but materials of Tudor date, or older. Four of these cottages are now complete, and were thrown open for occupation in the early part of 1937. Four more are contemplated to round off the scheme, raising the total to twenty-four. It is perhaps hardly necessary to say that Dr. Wynter provides this accommodation entirely free: his tenants pay neither rent nor rates.

The merits of this scheme of practical philanthropy need scarcely be laboured here: they stand out without need of adjectives or superlatives, and were generously acknowledged in the nursing papers in 1926 and 1927 when the first parts of it fructified. When Dr. Wynter communicated to the Governors of Middlesex Hospital the details of his plans, and the announcement of his intention to bequeath to the hospital the completed homes and to provide an endowment for them, to be kept in perpetuity for retired members of the nursing staff, the daily press also contained appreciative articles. At that time the plans were, if not in their infancy, at any rate very far removed from completion; and now that the design is well on the way to entire fulfilment it is possible to realize more fully what a blessing the enterprise will prove to the nursing profession, with which Dr. Wynter was closely and happily associated during the many years of his services to the Middlesex Hospital, to which he is consulting physician. Dr. Wynter entered the school there in 1878 as a scholar, and finally severed his active connexion with it in 1925, on retiring from the post of senior physician. He served for a long period on the Council of Epsom College, at which he was educated, and has been for many years past a member of the Newbury Borough Council.

The illustration shows a view of Jemmett's almshouses—now named Bartholomew Close—as reconstructed, with Dr. Wynter's house, Bartholomew Manor, beyond them; it is from a drawing by Mr. A. J. Campbell Cooper, reproduced in the *Newbury Weekly News* of August 16, 1934.

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Practical recommendations which should lead to eradicating discoloration and corrosion in canned cream are put forward in a recent publication of the International Tin Research and Development Council. The work was undertaken by C. J. Jackson and G. R. Howat of the Hannah Dairy Research Institute, and T. P. Hoar of the council. The defects studied are the occurrence of purpling, bronzing, and pitting of the can and black particles in the cream, and an explanation of them is now provided. The practical implications of this and a previous paper on the same subject relate to the quality of the milk used for cream manufacture, the quality of the tinplate used for the cans, the kind and amount of stabilizer used, and the conditions of processing and storage. The details are given in Technical Publications, Series A. Nos. 49 and 72, of the International Tin Research and Development Council. Copies may be obtained free of charge from Manfield House, 378, Strand, W.C.2.

# THE CROYDON TYPHOID INQUIRY

## MR. H. L. MURPHY'S REPORT

On November 22, 1937, Mr. Harold L. Murphy, K.C., was appointed by the Minister of Health to hold a local inquiry into the causes leading up to the outbreak of typhoid fever in the County Borough of Croydon during October and November, and the steps taken to deal with that outbreak. Sir Humphry Rolleston, Bt., M.D., and Mr. H. J. F. Gourley, M.Inst.C.E., were appointed to sit with Mr. Murphy at the same inquiry as assessors. The public sittings of the tribunal were reported week by week in these columns.[1] The report of the Inquiry, dated February 8 and signed by Mr. Murphy, was published on February 14 as a White Paper;[2] it is a printed document of seventeen pages.

### Main Conclusion

Mr. Murphy's main conclusion is set out on the first page as follows:

> The immediate cause of the outbreak was a portion of the public water supply becoming infected by the typhoid bacillus. The infected portion was that derived from a chalk well at Addington. How that well became infected is a question that cannot be answered with absolute certainty, but all the circumstances and probabilities point so strongly in one direction that I feel justified in coming to a definite conclusion on the subject. That conclusion is that the well was infected by the fact that at the end of September and during October, 1937, men, one of whom was an active carrier of typhoid, were working in the well, and that during large parts of such period water from the well, unfiltered and unchlorinated, was being pumped to supply.

At the end of the report he says: "The infection was due to an unfortunate and rare coincidence of three factors—(*a*) constructive changes taking place in the well, (*b*) one of the workmen being a typhoid carrier, and (*c*) the process of chlorination being in abeyance."

### Croydon Water

The Borough of Croydon mainly depends for its water supply on five wells, two of which, Addington and Stroud Green, supply what is called the high level area. The Addington well contributes 1,000,000 gallons to the normal yield of the Corporation wells of 6,066,000 gallons a day. The wells are situated in the Upper Chalk. Among the storage reservoirs supplied from them is one at Addington which represents the high level storage and which, though receiving some water from the Stroud Green well, was at the time primarily filled from the Addington well. It was estimated during the Inquiry that the population "at risk" on the high level supply was between 36,000 and 40,000 out of approximately 250,000 persons in the borough. With the exception of a few isolated cases all the primary cases of typhoid in the outbreak were within the area of the high level supply; in the few isolated cases the patients had opportunities of drinking high level supply water.

After a number of cases had been notified and it was apparent that the high level supply water might be implicated, samples of water from the Addington well and the Stroud Green well were submitted on November 3, 1937, for examination by the Ministry of Health bacteriologist. On the following day the test showed that the Stroud Green water was satisfactory, but that the water from the Addington well was heavily polluted, although the typhoid bacillus could not be isolated. On the same day (that is, November 4) the supply from the Addington well was cut off, and it seems certain that no primary case was infected after then. It is probable that there was no primary infection after November 1, when chlorination was applied to the well.

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[1] *British Medical Journal*, December 11, p. 1189; December 25, p. 1293; January 1, 1938, p. 30; January 8, p. 86; January 15, p. 135; January 22, p. 189.

[2] Cmd. 5664. H.M. Stationery Office. 1938. (4d.)

### Work at the Well

The report goes on to describe the well, which was constructed in 1888 and extends to a total depth of 205 feet. The object of the work on the well was to control the inflow into it so as to enable repairs to the pumping plant to be carried out. To keep down the water level while work was being carried out both of the two available pumps had to be used. With the two pumps at work it was not possible to pass the whole output through the filters. Before July, 1936, a chlorinating apparatus was available in the filter house, although it was only used at intervals; an ammoniator was added at that date as a result of unsatisfactory samples. Between September 24 and October 15, 1937, the water was pumped to waste while work was in progress and to supply during the remaining time. From October 16 till November 3 it was pumped continuously to supply. Neither the filter nor the chlorinating apparatus was in use during this period.

The men, eighteen in all, worked in two shifts of four hours. They were let down and drawn up from the well in couples in what is termed a "skip"—"a foreshortened barrel," in which chalk excavated from the adit to the well in which the men were working was also hoisted to the surface.

The provision for workmen requiring to relieve themselves while in the adit was this. An ordinary stable bucket was let down and kept in the adit. When, according to the evidence, it became half-full it was placed on, and bedded into, one of the loads of chalk going to the surface. This, of course, involved the skip being drawn into the adit from the main shaft; the chalk and bucket being placed in it; and its being released (though it may be with care) into the main shaft prior to being pulled up to the surface. The actual work the men were doing was lighted by hurricane lamps. In what part of the adit the bucket was kept did not clearly appear. I am satisfied that the men were warned that if their bowels were moved they should come to the surface, where there was adequate lavatory accommodation. I am also satisfied that in this long dark gallery where water was flowing there were ample opportunities, if a man were so minded, for the deposit of faeces and that there can have been no desire to multiply the daily journeys, up and down, in the skip. The typhoid carrier to whom I have already referred and who was, by common consent, described at the Inquiry as "Case A," worked in the well with certain recurring intervals from September 28 to October 26. It should be said of him at once that he was a man who had served in the war, had contracted typhoid in the war, and, through no fault of his own and in ignorance of the fact himself, remained a carrier of the bacillus.

From the evidence he had heard (Mr. Murphy's report continues) from eminent medical witnesses the period of incubation in water-borne epidemics was not likely to be less than fourteen days, twenty-one days would be fairly common, and the incubation period might be even longer. Whatever period was taken, the dates of the onset of symptoms pointed to the original infection having taken place while the work was proceeding in the well and while the carrier was there.

Dealing with other possible sources of infection, the report draws attention to the state of the area from which the Addington well derives its water. It is chalk soil covered above a certain elevation by a more or less permeable clay-with-flints. It is recognized that owing to wide fissures in the chalk water may flow through it almost completely unfiltered. The gathering ground of the Addington well has an area of not less than three and a half square miles, and in this area two possible sources of infection were inspected—namely, a farm known as Fisher's Farm and the site of a latrine used by workmen while building a school closely adjoining the well itself. Both these possible dangers have now been removed. A careful investigation into the medical history of those occupying houses and farms in the gathering ground showed that for a considerable time no case of typhoid had been notified or known in the area. "In these circumstances I think it is safe to conclude that though the gathering ground undoubtedly contained potential sources of danger the actual infection of the well was not derived from it."

### Departmental Incoordination

The facts having been stated, the report makes certain observations on them. Mr. Murphy points out that it was possible to shut off the supply from the well while work was taking place, which has actually been done since November 4, 1937. He continues:

There was both misunderstanding and lack of communication between the responsible officers of the Corporation in connexion with the work. Dr. Holden, the Medical Officer of Health, was never informed that the work was being carried out at all. He was in complete ignorance of it until after the outbreak had taken place. It is true that Dr. Holden's duties did not include any direct responsibilities with regard to water, but he was sent monthly analyses of the water taken from certain of the wells and reservoirs. He had frequently made careful comments upon these analyses and had advised on the question of chlorination. I cannot help thinking that if Dr. Holden had been informed that men were working in the well and that simultaneously filtration and chlorination had ceased his advice would have been sufficient to put an end to such a state of affairs. His ignorance of the fact that chlorination had ceased may seem the less surprising when I go on to say that Mr. Boast, the Borough Engineer, who was the person directly responsible for the water supply, was also in ignorance of it. At a meeting preliminary to the work being commenced between Mr. Boast, Mr. Brandram-Jones, the assistant water engineer, and Mr. Ellis, the mechanical engineering foreman in the Waterworks Department, it was brought home to Mr. Boast's mind that the proposed work would involve by-passing to a considerable extent the filtration plant. I am not satisfied that he then understood that it would involve a total by-passing of the filtration plant even when the water was being pumped to supply. He certainly never understood that it would involve elimination of the chlorinating plant. It was common ground between all three witnesses as to this interview that no mention of the chlorinating plant was made at all. This seems very surprising, for the filtration plant used as it was without a coagulant did little more than remove turbidity. The chlorinator, on the other hand, was worked with an ammoniator, and even with the very small dosage that was being adopted, and without the stepping up of that dosage which took place from time to time when the analyses seemed unsatisfactory, might conceivably have been effective to deal at least with the typhoid bacillus. Evidence was given that the typhoid bacillus is killed by a smaller dose than that necessary for the destruction of the colon bacillus. It would seem that Mr. Brandram-Jones overestimated the value of the filtration plant and underestimated that of the chlorinator. He attributed virtues to the filtration plant which it did not possess, and regarded (with some reason) the very small dosage applied to the chlorinator as one merely intended to keep it, so to speak, ticking over, so that it should be ready for stepping up from time to time when it was required. He therefore mentioned the cutting out of the filtration plant, but omitted to point out that this involved as a necessary consequence the cutting out of the chlorinator. Mr. Boast was not sufficiently acquainted with the layout of the pipes to be aware that the one proceeding followed the other. On October 31, 1937, after the outbreak had definitely begun, he inquired on the telephone from Mr. Brandram-Jones (who had left Croydon on October 16 to take up a post elsewhere) what orders he had left as to chlorination at the Russell Hill reservoir and Addington well, and learned for the first time that the latter was not being chlorinated at all, and had not been chlorinated for a considerable time. What is extremely difficult to understand is how (even in the absence of any communication with the Medical Officer of Health) it occurred to none of these gentlemen that the fact of men working in the well during a period when water was being pumped to supply afforded strong grounds for the stepping up of the dosage of chlorination in contrast to its elimination. If Mr. Boast had mentioned the desirability of increasing the dosage of chlorine he would at once have been informed that the by-passing of the filters involved the by-passing of the chlorinator. If it had occurred to Mr. Brandram-Jones, who regarded the existing dosage as merely nominal, that an

increase in the dosage of chlorination was desirable while the work was proceeding, he would, of course, have been the first to point out to Mr. Boast that the work was involving the total cessation of chlorination.

"In this surprising and regrettable state of affairs," the report continues, "the work commenced." Mr. Murphy did not accept that the men chosen for the work had been carefully selected for physical fitness out of a large number of volunteers. "The important point is that there was no examination at all, however cursory, by the only class of person who would have been qualified to express any opinion of value upon the subject—namely, a member of the medical profession." He continues:

I should observe, since I have dealt with the arrangement for urination while the men were working in the well, that this appears to have been completely unknown to Mr. Boast, although it would also appear that it had been the practice in Croydon during such work for many years.

Mr. Boast was under the impression that he had given directions to the effect that the men, whether they required to defecate or urinate, should be brought to the surface. If he did so (which was a matter of dispute) it would seem that his words were "use the lavatory," which might not have conveyed the meaning he intended to those, like Mr. Brandram-Jones and Mr. Ellis, acquainted with the practice of bringing men to the surface for the one purpose and not the other. I do not attach overmuch importance to this, for I think that there was much force in an observation made by Mr. Ellis that if there was insistence upon the men coming to the surface whenever they desired to urinate and no provision made for that purpose where the work was being carried on the danger of misconduct would be greatly increased. This is quite a different matter from the question whether the provision for urination in the well gave any guarantee of safety. In my opinion it did not. The most elementary care would seem to dictate at least the use of a vessel which could be closed before being thrust out into the well shaft and hauled to the surface. This is, perhaps, an appropriate point to refer to the fact that Case A was definitely ascertained to be a faecal carrier and that a number of tests failed to detect any trace of the bacillus in his urine. There is the less materiality in this, since the scientific evidence established that a very large proportion, probably more than one-half, of faecal cariers are, at least intermittently, urinary carriers, and that, as the detection of the bacillus in the urine is a more difficult matter than in the faeces, a negative result from even a large number of tests is not conclusive. While I have stated at the outset that all the probabilities point to the source of the infection of the well as being the work that took place in September and October, 1937, treating the gathering ground as a potential, but in this case improbable, source of infection, I am bound to say that singularly little attention appears to have been paid by the water department to that potential source prior to the outbreak.

It was regrettable that a contractor's workmen engaged on Corporation work were allowed to dig and use a latrine almost directly above one of the well adits, and also unfortunate that the privies of Fisher's Farm which drained only into the soil and with an obvious tendency to flow down through the chalk in the direction of the not distant well should have been ignored. "I should say at once," Mr. Murphy goes on to say, "that Mr. Boast's duties as borough engineer covered so wide a range of matters as to make it impossible for him to give detailed personal attention to the highly important subject of water supply. He was responsible for highways, lighting, drainage, housing, and many other matters. It may well be a matter for consideration whether in a borough of the dimensions of Croydon with its own water supply that supply should not be under the direction of a fully qualified water engineer reporting to a water committee and keeping in close touch with the medical officer of health."

### Dealing with the Outbreak

In considering the steps taken to deal with the outbreak the report observes that on October 20 a case of typhoid was notified but had no connexion with the outbreak, as the patient had contracted the infection whilst on holiday in France. The first case in the outbreak was notified on October 27, the second case on October 28, and two further cases on October 30, when the Medical Officer of Health received a letter from Mr. C. H. Rimington calling his attention to two further cases and stating, "with considerable prescience, that even in these early cases other possible causes could be eliminated and that 'the only common thing appears to be water.'" On October 31, a Sunday, a meeting of local ratepayers was organized by Mr. Rimington at which Dr. Holden and Mr. Boast were present. Mr. Murphy continues:

I have referred in connexion with the first subject-matter of the Inquiry to the odd lack of communication between the waterworks department and that of the Medical Officer of Health in connexion with what was being done at the Addington well. There is an equally surprising parallel in the opposite direction. Mr. Boast, the gentleman in sole control of the water undertaking, was unaware until October 31, when he received a telephone message to that effect from a private citizen, Mr. Rimington, that any cases of typhoid had occurred in the borough at all. This undoubtedly arose from Dr. Holden having formed the view that the possibility of water being the cause of the cases which had been notified was comparatively remote. There was some dispute as to what precise expression was used by Dr. Holden at the meeting on October 31 with regard to water being the cause of the infection. Dr. Holden's own statement as to what he may have said was "that I could not suspect water until I had eliminated other factors." There was a good deal of evidence from gentlemen present at the meeting that Dr. Holden used the word "inconceivable" in connexion with water as a possible cause, but Dr. Holden's own recollection as to what he may have said is quite sufficient to show the tendency of his mind at the time. There are a number of explanations of this. He had had the sporadic case on October 20; since then he had had only four notifications apart from the two mentioned in Mr. Rimington's letter. He was in complete ignorance, through no fault of his own, of the work that had been carried out in the Addington well and of the fact that chlorination there had stopped. There was nothing at the time to make him visualize the extent of the coming epidemic, although there was sufficient to make him uneasy. Sporadic cases of typhoid, though happily increasingly rare, are still common in the experience of a medical officer of health whose area comprises a population of a quarter of a million. Up to July, 1937, from the beginning of the year, there had been ten notifications of enteric fever in the borough, nine of which were cases of paratyphoid, the less virulent form of the disease which is very commonly derived from articles of food contaminated by a carrier. Dr. Holden had, no doubt, in his mind the last substantial outbreak of typhoid in the country, which was, in fact, found to be caused by milk, albeit the primary cause was the infection of the milk by water, though not from a public water supply. At the same time I think it is proper to point out that Dr. Holden was under the impression that water was comparatively rare as a cause of recent outbreaks of typhoid. That impression was wrong. I had the advantage of hearing the evidence of Dr. Suckling, an expert of very great qualifications and outstanding as an authority upon water supplies. He is the joint author of the standard work upon the subject which was freely used and referred to by all parties at the Inquiry. Dr. Suckling's opinion, expressed in his own words, was "I think that water occupies the pre-eminent position with regard to the spread of typhoid fever" and again "my view is that the majority of the epidemics of typhoid fever have been due to the infection of water rather than food." It is obvious that when typhoid occurs all possible sources of infection should be tested as soon as possible. It would seem, however, on the evidence I have heard, that even before it is possible to draw a line between the sporadic and the epidemical, water should be immediately suspected, and if there is any priority in the course of examination for possible causes it should be given to water.

It was on October 31 that Mr. Boast learnt from Mr. Brandram-Jones that chlorination of the Addington well had already ceased for some time. The matter was discussed by Dr. Holden and Mr. Boast, and as a result an adequate dosage of chlorination was applied to the Addington well on Monday morning, November 1. On the same day there were two further notifications, and Dr. Holden immediately communicated with the Ministry of Health. There was a further notification on November 2, and Dr. Holden again got in touch with the Ministry

and asked for the assistance of one of its medical staff. Dr. Ernest T. Conybeare of the Ministry arrived in Croydon on November 3 and attended daily at the Borough for some time. One of Dr. Conybeare's first inquiries was whether the residences from which cases had been reported were all on the same water supply. A map of the water system of the Borough produced by Mr. Boast made it "tolerably clear that the common vehicle of the infection was water from the high level supply." Consequently the samples were taken from the Stroud Green and Addington wells, the latter, as already stated, being found to be heavily polluted.

### Water in House Cisterns

After November 4 the primary sources of infection had ceased to operate and it was only from water in mains and cisterns originally supplied from the Addington well that any further primary infection could possibly be derived. A plan showing the nineteen latest cases to be notified had revealed that most of the houses concerned had small storage capacity, varying from 17 to 26 gallons. The two houses with the largest storage, one of 71 and the other of 56 gallons, had no tap connected with the storage tank. No fewer than six out of the nineteen had no storage tank and depended entirely upon the main. It was concluded that polluted water in cisterns and storage tanks after November 4 played no part in the epidemic. Dr. Suckling on his arrival at Croydon on November 11 recommended that water stored in unoccupied houses should be run off and that people who might be returning to houses which had been unoccupied for some time and where there were cold water storage tanks should be advised to run off the stored water. "It seems to me," states Mr. Murphy in the report, "on the evidence that this is a very desirable precaution and should be recommended at the very earliest possible moment after the water supply is ascertained to be the probable source of infection."

### Medical Co-operation

I come now to a matter of criticism which is to some extent general in relation to both of the periods which I have been considering. On November 1 Dr. Holden, by letter, notified all the registered medical practitioners in the Borough of the fact that certain typhoid cases had occurred in South Croydon. No details were given other than a general warning to keep the possibility of typhoid in their mind. It would be doing an injustice to the local medical practitioners to assume that, with this warning before them, they would not seriously consider the possibility of typhoid in any case of fever that they were called in to treat. That they would do so was stated in evidence which I accept, and indeed it seems obvious. On the other hand, there was uncontroverted evidence from the highest source before me that the clinical symptoms of typhoid vary in particular outbreaks and that the early symptoms can readily be mistaken for those attributable to other causes. The early manifestations sometimes seem to be not unlike those of influenza, and they can be, and have been, mistaken for those of appendicitis. In addition, the remarkable diminution of typhoid in this century has deprived medical practitioners of any common acquaintance with the disease. These facts seem to me strongly to enforce the view expressed by Sir William Willcox, who took the trouble of attending the Inquiry on January 6, 1938, to give the assistance of his valuable evidence, and to express the view that in all large areas there should be some committee representing all the local practitioners which, upon the occurrence of any outbreak, would be in constant and close touch with the Medical Officer of Health and would provide the means of pooling and distributing all the information available from time to time as to symptoms and possible causes. For instance, in the present case, it would have been of assistance to the general body of practitioners for the purposes of diagnosis to know as soon as possible that water had been identified as the source of the disease. It is desirable to make two things clear. First, Sir William Willcox was not directing any special criticism at the Corporation's medical services for lack of some such committee as this. On the contrary he emphasized the fact that the absence of such a body was general throughout the country except in very few cases. Secondly, nothing in the evidence of Sir William Willcox detracted from the fact that after the outbreak had taken place the sole responsibility for dealing with it rested with the Medical Officer of Health and that he could not at the time of such a crisis be expected to act as chairman of a committee. The view expressed by Sir William Willcox was a plea for some means of creating closer contact and more ready communication between the Medical Officer of Health and the general body of practitioners, and part of the value of the suggestion seems to me that it might tend rather to easing than increasing the work of the Medical Officer of Health during the course of an epidemic. I would observe, too, that a very large number of cases in this epidemic occurred on the very borders of the Borough, and that it was obviously desirable that contact and communication should be established between the Medical Officer of Health and a slightly larger number of doctors than those with addresses in the Borough Directory.

### The M.O.H. for Croydon

In conclusion the report states that although there was severe criticism of Corporation officers during the Inquiry it had never been suggested that once a case of typhoid was reported it was not promptly, carefully, and skilfully dealt with. The main task of the medical officer of health throughout the epidemic was the provision of accommodation for the sufferers and "the treatment necessary to keep down the death roll as far as possible." The burden upon Dr. Holden in this respect was enormous, and nobody suggested that he did not discharge it adequately and well.

Counsel appearing on behalf of certain local medical bodies put forward, with considerable skill and moderation, an appeal for greater co-ordination between the Medical Health Department and general practitioners, but expressing the views of his clients, described Dr. Holden as "a loyal, able, and industrious servant of the Corporation as well as a truthful and careful witness." With that expression of opinion I concur. It appears to me that the only legitimate criticism that can be directed at Dr. Holden in this case is a slight delay in his realization that "water" was or might be the cause of the epidemic. I do not think that until after October 29 he had any reason for directing his mind to water. The two cases notified up to that date, like the earlier case on October 20, might well have been regarded as sporadic. On October 30 he had two more notifications and the indication of two further cases, making six in all. I think by then his mind might well have turned to water, but it is clear from the evidence as to what took place on October 31 that he remained until then reluctant to consider water as a probability. As I have already said, it was on the morning of November 1 that effective chlorination took place at the Addington well, although Dr. Holden admitted that this was done as a precaution and not because the well was then suspected. From these facts it will be obvious that any criticism of delay in attacking the Addington well supply must be based upon a period not exceeding two days, and I must repeat that Dr. Holden until October 31 was ignorant of the fact that chlorination had ceased at the well. If separate samples of the well water were taken on October 30, as they were in fact on November 3, the result would have been known at the earliest on October 31, and could at best have meant the speeding up of chlorination by some hours. The dates of the various cases render it unlikely that any infection was caused by this short delay, and if I had to come to a conclusion upon the matter I should say that it was not.

Mr. Murphy ends his report by saying that while the responsibility for the conclusions and the grounds for stating them are entirely his own, his assessors, to whom he pays tribute for their invaluable, painstaking, and loyal assistance, are in general agreement with them.

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To the *Revue Médicale de la Suisse Romande* of December 25, 1937, A. Guisan contributes an interesting account of Charles Augustin Sainte-Beuve (1804–69), who, abandoning medicine for literature, one hundred years ago gave his first course of lectures at the University of Lausanne. The paper refers to his last illness and gives the post-mortem findings.

## GRANTS FOR SCIENTIFIC RESEARCH

The fourteenth annual report of the trustees of the Ella Sachs Plotz Foundation for the Advancement of Scientific Investigation shows that twenty-six grants were made, eighteen of which were awarded to scientists outside the United States. In the fourteen years of its existence the Foundation has made 308 grants to scientific investigators throughout the world. The list of grantees during the current year includes Dr. Melville Arnott of Edinburgh, for further research into the connexion between renal damage and hypertension; Dr. Ernst Fraenkel of London, for research on the chemical nature of an inhibitory substance in the Rous fowl sarcoma and other malignant growths; Professor William Frei of London, who is studying the questions whether it is advisable to substitute for the original vaccine of the "Frei test" vaccines of animal origin and whether renal stricture is caused by the virus of lymphogranuloma inguinale; Dr. Honor B. Fell of Cambridge, for continuation of Miss S. Glasstone's nutritional studies; Dr. David E. Green of Cambridge, for the isolation and purification of coenzymes I and II from yeast and for pharmacological investigation of the conversion of adrenaline to adenochrome; and Dr. Alexander Schönberg of Edinburgh, for the study of various chemical problems, one of which relates to a strong oestrogenic agent. Grants are at present limited to investigations in the sciences closely related to medicine and surgery, and may be used for the purchase of apparatus and supplies for special researches, but not for equipment and material which are ordinarily found in laboratories. Stipends for the support of investigators can only be granted in exceptional circumstances. The maximum size of grants is usually less than 500 dollars. Applications for grants to be held during the year 1938–9 must be received by Dr. Joseph C. Aub, Collis P Huntington Memorial Hospital, 695, Huntington Avenue, Boston, Massachusetts, before the end of April.

## ROYAL MEDICAL BENEVOLENT FUND

At a recent meeting of the committee fourteen annuitants were elected, the total amount voted being £398. In addition fifty-one beneficiaries, including twelve new applicants, were awarded grants amounting to £1,134 19s. 5d. The following are particulars of three cases:

Widow, aged 86, of M.B., C.M., who up to the time of his death in 1938 had been in receipt of a Fund annuity of £78, Epsom Pension of £62, and Old Age Pension £26, all of which ceased at his death, leaving his widow with only her Old Age Pension of £26. The Fund voted a grant of £52.

Daughter, aged 67, of M.R.C.S., who since her father's death has supported herself by giving lessons in music and languages. She had to give up her employment and enter hospital, where a panhysterectomy was performed in October, 1937. Her income during the past twelve months had been only £15 from earnings and £15 from occasional gifts. It was stated that only through the kindness of friends, who gave her clothing and many meals, had this lady been able to manage on her income. The Fund voted £31 10s. for nursing home fees, and in addition voted £36 for a period of twelve months.

Widow, aged 62, of M.B., C.M. Since her husband died in 1918 this lady had supported herself as nurse-companion until her last patient died in December, 1937. She is handicapped from getting employment owing to her age, and also to a Dupuytren's contraction. The Fund voted £26.

Subscriptions and donations are urgently needed, and may be sent to the Honorary Treasurer, Royal Medical Benevolent Fund, 11, Chandos Street, Cavendish Square, London, W.1.

An inquiry into the effect of London omnibus men's work on their health will begin early next month at the Ministry of Labour. This investigation was recommended by the Court of Inquiry into the London bus dispute last spring. Mr. John Forster, who presided over the Court of Inquiry, will be chairman of the health investigation; the other members are Air Vice-Marshal Sir David Munro, K.C.B., M.B., and Dr. A. Bradford Hill, nominated by the Medical Research Council, with two representatives appointed by the London Passenger Transport Board and by the Transport and General Workers' Union.

# Reports of Societies

## THE LAW RELATING TO ABORTION

A debate arranged by the Fellowship of Medicine took place on February 9 on the proposition "That the law of abortion requires reform." This was supported by Sir Beckwith Whitehouse and opposed by Dr. W. H. F. Oxley. There was a very large attendance of about 300.

Mr. JUSTICE HUMPHREYS, who presided, said that the position he occupied on the Bench made it undesirable that he should express any opinion on a proposed alteration of the law, and he contented himself with a statement of the law as it was at present. In 1837 it was made a criminal offence for any person other than the woman herself to use any means for the purpose of securing a miscarriage. In 1861, when the criminal law was consolidated, it included the woman herself as a guilty party. This was the whole law relating to abortion, except for the Infant Life Preservation Act, 1929, which brought into existence the new crime called child destruction. It provided that any person who by a wilful act caused a child which was capable of being born alive to die before it had an existence independent of its mother should be deemed guilty of a felony in the same way as the procurer of abortion, the maximum penalty in both cases being penal servitude for life.

### Position of the Doctor

What of the doctor who decided, solely in the interests of the patient, and with a view to saving her life, that a pregnancy must be terminated? Did he come under Section 58 of the Act of 1861? Doctors had said to him, "Do not tell us that nobody would prosecute, or that if prosecuted we should get off. As reputable members of the profession we object to being placed in the category of persons who are committing a crime." Mr. Justice Humphreys said that he could only give his private opinion, though he thought his fellow judges would not differ from his view, that a medical man who in those circumstances terminated the pregnancy was committing no offence against the law. Criminal statutes, like other statutes, must be construed reasonably. To his mind it was unthinkable that the criminal law could have been so stupid as to have provided that a medical man in an effort to save life was committing a criminal offence. On the question whether the doctor was entitled to terminate a pregnancy with the object of improving the health of the patient, that was no doubt one of the matters which would be touched upon in the debate and on which he preferred to remain silent.

Sir BECKWITH WHITEHOUSE said that the law of 1861—in no way ameliorated in this respect by the Infant Life Preservation Act, 1929—was harsh in its implications regarding the prospective mother. The art of medicine might still only be applied to-day in the legal termination of the pregnancy if the mother's or child's life was threatened. Yet both the medical and the legal professions were endeavouring to find loopholes in the law for making an obvious wrong a right. They no longer subscribed to the doctrine that the life of the child was paramount, and that so long as the mother's life was preserved it did not matter what physical or mental wreck she became. Some of the indications advanced for the termination of pregnancy were generally acceptable, others were flippant, and the majority concerned not the life but the health of the woman; but as matters stood to-day all such operations were illegal. Abortions, including so-called therapeutic abortions, were increasing. It was with regard to abortions undertaken for *bona fide* medical reasons that he asked for reform of the existing law. The law should be re-enacted, as suggested in Taylor's *Jurisprudence* (seventh edition), to exempt from liability the fully qualified practitioner who terminated a pregnancy

for the *bona fide* purpose of preserving the mother from special danger to life or health. At the same time, certain precautions must be taken. Two weapons were available for defence against the unscrupulous patient and the over-sympathetic practitioner. These were (1) notification of all cases of therapeutic abortion before the operation was performed, and (2) the unanimous agreement of a board of three individuals—namely, the family practitioner, the surgeon performing the operation, and a disinterested physician, surgeon, obstetrician, or alienist, with special knowledge of the condition for which the operation was suggested.

### Notification

Sir Beckwith Whitehouse was of opinion that while notification was no hardship to the genuine patient, it would act as a deterrent to the potentially criminal type of applicant. The mere fact that the case had to be notified would reduce the number of cases in which it was necessary. Some form of notification of therapeutic abortion was a reform urgently and increasingly necessary. By its means the light of medical and public criticism would be focused for good or evil upon those individuals who developed a penchant for this type of practice. The reference to a board of three persons would also have the effect of tightening up the existing law and limiting the activities of the medical abortionists. He added that if reform of the law on abortion simply implied increased licence in the performance of an operation which the majority of obstetric surgeons detested, then he would be no party to it. What he wanted was the law so amended that when the genuine indication arose they might say to themselves and their patients, irrespective of questions of life or death, "This operation is both justifiable and legal." Further, they were anxious to eliminate from the profession anything that savoured, even remotely, of illegality.

Dr. W. H. F. OXLEY, in opposing the proposition, said the agitation for reform came from three groups: those who wished to enlarge the scope of abortion so as to include all cases where women wished to have their pregnancy terminated, whatever the reason; those who wanted to reduce the number of illegal abortions by increased stringency of regulation; and those in the medical profession who desired a clear statutory definition of the indications which would make artificial termination of pregnancy lawful. There was no need to spend time over the first group, whose main thesis was entirely immoral. He instanced the experience of Soviet Russia, which found that it had made an error in permitting wholesale abortion, and had now passed repressive legislation. As for the second group, he believed that many of the arguments they advanced were unsound and the methods they advised would prove ineffective.

### Is Abortion Increasing?

In the first place, there was no proof that abortion was increasing in this country. He gave certain figures compiled in representative localities which appeared to show that the percentage of pregnancies ending in abortion had remained constant over the last forty years. The deaths attributed to abortion had remained steady between 400 and 490 each year from 1926 to 1934. The problem was comparatively small and did not warrant panic legislation.

In pressing for notification by doctors attending cases of abortion, whether spontaneous or induced, the advocates of such a course forgot the clandestine character of illegal operations. Doctors were not called in at all in illegal cases, and therefore the cases on which information was wanted would be the very ones in which it would not be forthcoming. Another suggestion was that the sale of substances used for procuring abortion should be restricted under the Pharmacy and Poisons Act. This would be futile, for the most effective and most commonly used drugs were simple aperients taken in excess. For such restrictions to be effective the sale of Beecham's pills, Higginson's syringes, and knitting needles would have to be made illegal, which was absurd.

Recent reports had led to the conclusion that the vast majority of intentional abortions were brought about by simple means by respectable married women with families, chiefly for economic reasons. Only by eradicating the economic causes at work could the desired result be secured. Dr. Oxley's conclusion was that the doctor must act in accordance with his generally recognized duties—namely, those of saving the life or the health of his patient; he would not be justified in performing abortion for sociological or eugenic reasons. He did not believe there had ever been a prosecution of a doctor who had kept within his province, and he saw no reason for alteration of the law.

Mr. V. B. GREEN-ARMYTAGE considered that if the law was to be altered in the direction Sir Beckwith Whitehouse desired a state of inelasticity would be created, no extenuating circumstances would be allowed, and neither doctor nor patient would be benefited. Dr. LETITIA FAIRFIELD also thought that the practical interpretation of the law as regards the health of the mother, not her life only, was so broad that in practice it seemed entirely to do away with the necessity for the very limited reform Sir Beckwith Whitehouse proposed. Her "blood curdled" at the thought of a medical board of three persons; she knew what it meant in necessary formalism—delay, obstruction, and interference. It did credit to the "adolescent innocence" of Sir Beckwith Whitehouse when he suggested setting up such a regulation for the profession. She agreed with Dr. Oxley that there was no considerable increase in abortion. The case histories of over 17,000 women in the maternity wards of L.C.C. hospitals had lately been investigated—women who had come to term or given birth to a viable child—and among them there was a history of under 7 per cent. of abortions. The number of septic abortions in these hospitals was precisely the same in 1936 as in 1931, although in the meantime the maternity accommodation had been greatly extended. The deaths from abortion, although they had fluctuated considerably, were lower in 1936 than at any time during the previous seven years.

### Legal Opinions

Mr. T. ANDERSON DAVIES (solicitor) thought there was something to be said for the unmarried prospective mother applying to a board of three persons—he suggested two doctors and a third person such as a court probation officer—who would decide whether it was in the interests of the State that the child should be born. If they said "No," then let an abortion be performed under proper circumstances. But the mother should not be kicked about, the stigmatized parent of an illegitimate child or the partner of an unwilling husband. Dr. BINNIE DUNLOP said he could not vote for either side. He considered that the law should be abolished altogether. If it was said that it was a law against murder, then they had no right to interfere, even on therapeutic grounds, with a pregnancy. They were in that dilemma. It struck him as strange to hear medical people discussing this as if it were a medical law; it was a religious law, an old Church law, and they were endeavouring to produce medical reasons for it.

Mr. HARCOURT KITCHIN (barrister-at-law) thought it a pity that the law should be vague. The medical profession did not want to behave illegally, and he would like to see a subsection declaring that it was lawful for a registered medical practitioner to bring about the miscarriage of a woman if he believed reasonably and in good faith that should her pregnancy be continued it would cause damage to her health. He would also include the rather rare cases of pregnancy following rape and incest. Dr. G. H. ALABASTER pointed out that the reform of the law regarding abortion really turned on

the question of making pregnancy more acceptable. Dr. DORIS ODLUM thought it Gilbertian to hold that the law should not be changed because in fact it was not enforced. The real crux of the problem was the economic question. So long as certain economic conditions persisted the law would be broken whatever the law was.

Dr. JOAN MALLESON said that Sir Beckwith Whitehouse seemed to be considering one small section of women at the expense of the others. His interest seemed to be in those women who could have therapeutic abortions to save their health, and he was not concerned with that large mass of women who were going to have criminal abortion performed in any case. He was concerned to knock out of the business practitioners who were "generous" in their interpretation of the law, but it was because some members of the profession were "generous" that many women were spared self-inflicted criminal abortion, which brought the highest morbidity and sterility rate. Dr. DOUGLAS LINDSAY spoke of the legitimate dread of the coroner's inquiry in England, and contrasted the proceedings in Scotland, to the advantage of the latter, where the inquiry was carried out by the procurator-fiscal, with no attendant publicity unless there was a criminal element, and yet in which no criminal element was allowed to escape.

### The Summing-up

The openers having briefly replied, Mr. JUSTICE HUMPHREYS said that he doubted whether statistics of criminal abortion were reliable. Abortions were to a very large extent carried out by the women themselves, and when successful, of course, they never got into the statistics at all. Others were carried out by professional abortionists, people with some slight medical knowledge. He believed the crime of abortion to be increasing, though not to any great extent.

"Dr. Oxley has said—I do not say I agree or disagree, but it is what a brave man would say and would practise—'Consider your patient, consider nothing but your patient's welfare, and if you come to the honest conclusion that your patient's welfare demands that you take a certain course, take it, and run the risk of somebody taking a different view.' I am quite sure that Dr. Oxley would agree with me in this, that it should not be done in a hole-and-corner way, because in that case people may doubt your *bona fides*. You should get your brother physicians or surgeons around you, you should get a thoroughly qualified hospital nurse to come and attend whatever it is you are going to do, you should let the whole world know what you are doing and why you are doing it. Otherwise the man who carries out an abortion which in certain circumstances might be a criminal offence is a fool."

Mr. Justice Humphreys added:

"When somebody puts a concrete case to me, and gives me the history of the patient, saying that the doctor found out this, that, or the other, and came to the honest conclusion that it was essential that an operation should be done, then I do not think that the jury would disagree with the view that the judge would take of the matter, and it would be a view favourable to the doctor. But until you can get some form of words as simple as the words 'for the purpose of saving life,' I hesitate to say that the doctor is entitled to perform an operation for procuring miscarriage merely to make the patient more healthy, because I do not know what you are proposing."

A show of hands was taken on the proposition "That the law of abortion requires reform," and it secured assent by not a large majority. The numbers were not taken.

[A verbatim report of the debate will appear in the *Postgraduate Medical Journal* for March.]

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At the annual general meeting of the Devon and Exeter Medico-Chirurgical Society on January 27, with the newly elected president, Dr. ROBERT SCOTT, in the chair, Dr. HUMPHREY FOY discussed the role of radiology in the early diagnosis and treatment of hypernephroma and other renal tumours.

## INSULIN THERAPY IN SCHIZOPHRENIA

In the Section of Psychiatry of the Royal Society of Medicine on February 8, with Dr. J. S. GOODALL in the chair, Dr. G. W. B. JAMES (with whom Dr. Rudolph Freudenberg and Dr. A. Tandy Cannon were associated) described a year's experience of insulin therapy in schizophrenia.

The insulin shock method—Dr. James deprecated the word "shock" as unnecessarily suggestive of danger—of treating schizophrenia, introduced by Sakel in 1933 at the Potzl Clinic, Vienna, has been in use at Moorcroft House, Hillingdon, since January, 1937, and Dr. James's communication summarized his experience with twenty-four cases completed during that period. In some quarters there was a tendency to magnify the risks of the method, but Muller in 495 cases treated in Swiss hospitals gave a mortality rate of 0.5 per cent., and probably, with improvement and standardization in technique, this rate might be further reduced. During the first six months at Moorcroft House the Wellcome brand of pure crystalline insulin was used; afterwards a change was made to Boots' insulin, which was a gland extract. It was not easy to give any precise information about the average dose of insulin required to produce hypoglycaemic coma. Coma had been produced by 15 units, while, on the other hand, one case required over 400 units. Blood-sugar estimations showed a fairly constant series of changes. Within an hour of injection the blood sugar fell to 30 mg. per 100 c.cm. or even less; it remained at about that level during the whole of the hypoglycaemic period. Half an hour after interruption, when the patient was conscious, the blood sugar rose to a little below normal, and about one hour after interruption it returned to normal, and continued to rise under the influence of a large carbohydrate supply. Treatment was begun at the hour of 7 a.m., and the total hypoglycaemic period was not allowed to exceed five hours, save in exceptional cases when it went to six hours. In selected cases insulin and cardiazol combined were used, and the combination of the two agents seemed to show better therapeutic results than either alone. In the twenty-four cases there had been seventy-three epileptiform attacks due to hypoglycaemia; fourteen of these were interrupted intravenously and fifty-nine by the use of the intranasal tube. In a total of 1,628 "patient-insulin" days intravenous interruption was necessary on 106 occasions, in the majority of the cases owing to failure to arouse the patient thirty minutes after the nasal tube feed.

### Classification of Results

Out of a total of ten cases with symptoms lasting up to eighteen months, nine had returned home and resumed their former occupation. The other fourteen were cases with histories of eighteen months or more, and of these only three had shown remissions; two of the three had returned home, and the third awaited his discharge. Some of the old-standing cases treated showed clinical improvement. The longest period of treatment was 118 days, the shortest twenty-six days, the average sixty-seven days. By the kindness of the members of the British Psychiatric Insulin Society Dr. James was able to present a summary of a further ninety-four cases (among which there had been one death), which, added to the twenty-four already described, gave a total of 118. The results in this total were shown as follows:

| Duration of Symptoms | No. of Cases | Complete Remissions | Unimproved |
|---|---|---|---|
| Under 6 months .. .. | 22 | 19 | 3 |
| From 6 to 12 months .. | 18 | 15 | 3 |
| From 12 to 18 months .. | 9 | 5 | 4 |
| Over 18 months .. .. | 69 | 22 | 47 |
| | 118 | 61 (51.7 per cent.) | 57 |

It was his considered opinion as a result of the year's work that insulin therapy provided a very promising method of treatment in schizophrenia, especially if applied during the first eighteen months of the illness. He projected a film taken by Kodak Ltd. illustrating in a patient the normal course of insulin therapy from injection to interruption, and including a number of "shots" of different patients to show the phenomena of hypoglycaemia. The facial expressions and muscular reactions of the patients were excellently shown.

### General Discussion

Dr. MURDO MACKENZIE said that when drastic methods of treatment were proposed for general paralysis the justification could always be given that here was an inflammatory and killing disease which must be dealt with within a limited period. But the illness under discussion could not be described in that way, and the grounds for advising the treatment must be other than the need for resort to a desperate remedy. The treatment therefore could only be justified on the grounds of experience, and there seemed no doubt from Dr. James's communication that it was clinically worth while. What he wanted to know was whether this new insulin treatment was of any help for those who lived a quiet and aloof life at home, with occasional bursts of excitement and inertia. In mild, persisting schizophrenia was it justifiable to advise admission to a hospital for the purpose of this treatment? As it stood at present, was insulin therapy primarily for the acute and recoverable cases or were long-standing chronic cases likely to benefit? The therapy was completely empirical.

Dr. PULLAR STRECKER said that it had been a disadvantage to this form of insulin treatment that the percentage of complete remissions quoted by the first workers in this field had been too high. Such a figure as 80 per cent. was really too "encouraging." Meanwhile about 3,000 cases had been treated in different countries, and the percentages quoted had become considerably lower. In Switzerland a remission rate of 57 per cent. was mentioned—a much more acceptable figure. With further experience the figure might become lower still, and this would be all to the good, because a sound treatment like insulin therapy was not out to create records. Dr. E. H. LARKIN said that the results at West Ham Hospital had been such that he had come to the conclusion that insulin and cardiazol or one of them alone should be given in all cases of schizophrenia. The quality of the remissions was excellent. Dr. ELEANOR CREAK asked the age of the youngest patient, and whether insulin should be prescribed for the severe attacks appearing and quickly disappearing in adolescence. Dr. DONALD BLAIR pointed out that in considering the relative merits of cardiazol and insulin it should be remembered that the former was comparatively simple to inject, whereas insulin was much more troublesome and required a trained staff. Dr. HENRY YELLOWLEES asked how the duration of the symptoms had been ascertained.

Dr. JAMES, in reply, pointed out that cardiazol alone was rather terrifying for the patient. If he was allowed to become somnolent with insulin and then given cardiazol he did not mind it, and had forgotten the experience by the next day. His view at present was that the combined use was likely to prove better than the use of either agent alone. As to finding out the past duration of the symptoms, the method had been to see one or, if possible, two relatives and endeavour to arrive at the date at which the family first noticed that the patient was queer. The youngest patient was aged 17. Dr. Mackenzie was quite right in commenting on the empirical nature of the treatment. He thought that if the symptoms had not lasted longer than two years the method was worth trying.

## SIGNIFICANCE OF SEX HORMONE EXCRETION

At a meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on February 8, Dr. J. W. TREVAN presiding, a paper was read by Dr. R. K. CALLOW on the significance of the excretion of sex hormones in the urine.

In reviewing recent work, Dr. Callow said that the sex hormones known to be excreted in the urine were not identical with the hormones which had been actually isolated from the organs of secretion. Experimentally it was found that when active substances were administered only a very small proportion was excreted in recognizable form, and the excreted form might even be inactive. This general statement applied to oestrogens, androgens, progestin, and gonadotropic hormone. As regards the male hormone, no data had been published on the recovery of this hormone after administration to human subjects, but in the course of an investigation designed for another purpose, under the auspices of the Therapeutic Trials Committee of the Medical Research Council, on the effect of androgens on prostatic hypertrophy, some observations had been made. The administration of testosterone appeared to produce a decrease in the excretion of androgens, which was followed, after administration had ceased, by an increase. With a dosage of 50 mg. a week the total excreted in one case was 9.2 per cent. of the intake, and in another 5.4 per cent. In general it seemed that the destruction and inactivation of male hormone in the body was so intense that the amount of the hormone recovered from the urine was only a very small proportion, unlikely to furnish results of any great significance in respect of male hormone metabolism. Hormone activity in the urine was an uncertain index of hormonal activities in the body. In the case of male hormone activity the lack of relation between urinary androgens and the sexual condition had led to the assumption that the androgens in the urine were largely derived from sources other than the gonads, probably the adrenal glands, and work on this question was being pursued. Again, with increasing knowledge of the chemistry and metabolism of hormones, methods of assaying urine had been devised which gave results capable of correlation with known or assumed physiological processes, notably in pregnancy and the normal menstrual cycle, and obvious effects were produced with certain types of tumour.

In cases where relatively large amounts of hormone were produced and excreted, hormone assay was an extremely valuable aid to diagnosis. In quite another category, with present methods, or even perhaps improved methods, were the mildly abnormal cases. He thought that the assumed significance of urinary sex hormone estimation must be justified empirically. If it were known definitely that in a certain physiological state a given sex hormone was produced in large amount, and a corresponding product was found in the urine, then a connexion was established, and it would be possible to extend to other circumstances an argument based on analogy. Argument in the other direction, from observed excretion to a process in the body, would be unsafe. He repeated the remark of R. T. Franck, based on nine years' work on hormone assays, that such studies, though they served as valuable aids, could not replace clinical examination and experience. He hoped, however, that the biochemists and chemists might improve the position.

### Effect of Tumours of Adrenal Cortex

Dr. LEVY SIMPSON said that normal people, both male and female, excreted so-called male and female hormones in amounts of approximately the same order. By female hormones he meant oestrogenic hormones, and by male the hormones causing growth of comb in a capon. In 1933, on investigating, first clinically, a virile woman, it occurred to him that possibly her virilism and hirsutism was associated with an increased excretion of male

hormone, and this point was investigated both on capons and on castrated rats. Fortunately for himself and his fellow investigators this particular woman had a very large excretion of male hormone. If she had been one of those virile women who did not excrete a large amount of male hormone the investigation might never have been continued. They investigated a series of cases, and the majority showed an excess of male hormone excretion. It seemed possible that the adrenal glands were responsible, but that could only be suggested, and it was not until later work was done that this possibility became a probability. Why some of the women excreted an excess while others did not was difficult to say on the assumption that excretion was a measure of secretion, but probably this was not so. Also important was the reactivity of the tissues to such hormones; in some cases the tissues were refractory and in others sensitive. Tumours threw a very interesting light on the problem. He personally had had experience of both an adrenal tumour in a female producing virilism and an adrenal tumour in a male producing feminism—namely, atrophy of the penis with impotence, together with enlargement of breast, female configuration, and a higher tone of voice. The female with the adrenal tumour excreted a very large excess of the male or comb-growth hormone, and the male with the adrenal tumour a large excess of the oestrogenic hormone. Hitherto one had always thought that the histology of two such tumours was much the same, but why should an adrenal cortical tumour in the male produce apparently oestrogenic hormone and in the female apparently male hormone? On examination of the tumour from the female a colleague found some discrete granules which she thought to be of significance and which were absent from other tumours of females which she had examined. These discrete granules were found to be present in normal adrenals, in the inner layer of the cortex, in males at or just after puberty.

If there was such a histological basis, then it must be assumed that somewhere or other the ovary converted a hormone from the adrenal cortex into a male hormone, and the testis converted a hormone from the adrenal cortex into an oestrogenic hormone, which seemed a paradox very difficult to believe. Had this finding of excess of comb-growth hormone in the urine of virile women any diagnostic significance? If the excess was gross could a tumour be assumed? That was very important, because in many cases of Cushing's syndrome it was not known whether it was due to hyperplasia from a pituitary abnormality or whether a tumour of the adrenal cortex should be sought. From the little experience he and his fellow workers had had, he thought it could be said that if the amount of comb-growth hormone was grossly in excess of 300 international units per day one should search very diligently for a tumour, and that if necessary one was justified in doing a laparotomy. Unfortunately some cases of hyperplasia might also show an excess up to 300 units, so that this finding, although suggestive, was not conclusive.

Dr. F. L. WARREN and Dr. A. C. CROOK referred to some experiments bearing out what Dr. LEVY SIMPSON had just advanced, and Dr. A. S. PARKES made some philosophical observations on hormones in general. He felt that it was difficult, if not impossible, to draw any distinction between waste products and hormones. There was something to be said for the idea that all hormones were originally waste products which the body learned later to use. The waste product of to-day might be said to be the hormone of to-morrow. The trend of vertebrate evolution would be towards universal intersexuality. Not only were both the oestrogenic and androgenic substances found in both sexes and excreted by both, but each product had an effect in reproducing the characters of the corresponding sex. [A paper by Dr. Parkes on "Effective Absorption of Hormones" appears this week at p. 371.]

## TREATMENT OF OTITIS EXTERNA

At a meeting of the Section of Otology of the Royal Society of Medicine, on February 4, Mr. F. J. CLEMINSON presiding, a discussion took place on otitis externa, which is also the subject of an article, recording an investigation of 100 cases, by Flight Lieutenant George Morley elsewhere in this issue.

Dr. HENRY MACCORMAC said that the term "otitis externa" implied an eczematous or infective condition of the external auditory canal, but in dermatological practice it was rare to meet an eruption so confined, and therefore the meaning was extended to include the more widely spread eruptions of and behind the ear. He confined his observations to the two most common processes—impetigo and eczema. The treatment of impetigo presented as a rule no difficulty, the lesions responding to various agents. The parasiticide had only to be applied in sufficient concentration to kill the parasite without irritating the skin. The skin was often looked upon as a gas-tight and water-tight envelope covering the body, but it was far more than this, with important functions to fulfil. Treatment might be considered in three phases: (1) simple protective and soothing; (2) selective, having specific effect on certain diseases; and (3) parasiticide, including antiseptics.

Mr. G. EWART MARTIN said that otitis externa was entirely a skin disease, and but for the curiosity of its position would come under the dermatologist. Like every skin condition it had two causal factors—the invading organism and the resistibility of the individual. The development of idiosyncrasy had been shown to be due to previous contact with the irritant, but this could be demonstrated only in a few cases, and in the large majority no reason was afforded for the change in skin response. He classified otitis externa into (1) acute otitis externa, or furunculosis; (2) croupous otitis externa; (3) acute haemorrhagic otitis externa; (4) otomycosis, including all the inflammations of the external ear due to fungi; and (5) a group usually described as an eczema of the external auditory meatus, really a meatitis, acute or chronic, for which he suggested the term "dermatitis." A four-year analysis of cases seen in the department of the Royal Infirmary, Edinburgh, showed that 55 per cent. of the cases were furunculosis and about 30 per cent. eczema of the meatus. The largest seasonal incidence of furunculosis, like otitis media, occurred in the period from December to March, and eczema of the meatus showed its largest figures in July, shortly after the start of the bathing season. The principles underlying treatment of skin conditions were: first, cleansing of the part; secondly, application of a simple non-irritating antiseptic or other local treatment; and, thirdly, treatment of the cause. It was best not to experiment with a multiplicity of methods, but having found a suitable application to learn how and when to use it. It had been his practice in furunculosis never to excise except in extreme cases, believing that incision would only act as a further point of access for the invading organisms.

### Some Precautions in Treatment

Mr. ERIC WATSON-WILLIAMS said that otitis externa almost disappeared from the realm of difficulty if hydrogen peroxide were rigidly excluded from the ear and indeed from the otological department. Often all that it was necessary to do was to tell the patient to stop treating his ears with hydrogen peroxide. His guiding principle in the treatment of otitis externa for many years had been to prevent water from going into the ear. It was true that syringing was necessary when there was a hard mass of wax or epithelial debris, but he did not think that water had any other place in treatment. In cases of impetigo his experience was that if the child patients were given iron for a month it shortened and simplified the treatment of the ear condition.

Mr. RITCHIE RODGER pointed out the danger of over-treatment in the more chronic eczematous processes or

seborrhoeic dermatitis. If the use of over-strong preparations and the scratching consequent upon the irritation of the ear could be eliminated most cases of this kind would clear up very quickly. He had found very little difficulty in getting cases under control with a simple ointment of zinc oxide and salicylic acid in lanoline, which was better than vaseline for the purpose.

Mr. W. S. THACKER NEVILLE said that in seborrhoea his routine treatment was silver nitrate followed by applications of ultra-violet light. For furunculosis he believed the best treatment to be diathermy, but it was very painful; he had lately acquired an instrument called the ultra-therm, which was better. Mr. J. F. O'MALLEY said that he had always found seborrhoeic eczema of the ear associated with seborrhoea of the scalp, and it was of no use attempting to treat the local ear trouble unless the scalp were treated simultaneously, preferably by a shampoo of soft soap dissolved in spirit.

Mr. T. B. LAYTON believed that acute haemorrhagic otitis externa was always secondary to an inflammation of the middle-ear nerve. With regard to Mr. Martin's group of croupous otitis externa, he had only once seen a case of true diphtheria of the outer ear, with a membrane which spread out to the pinna. In general he thought the form of croupous otitis externa usually seen differed very little from the otitis externa which was secondary to otitis media. The important thing was to remember that all these skin organisms needed moisture in which to grow. If the ear was kept dry their growth was inhibited. For keeping the ear dry he found glycerin most useful; surgical spirit was a little irritating.

Mr. MUSGRAVE WOODMAN dissented from the view that the haemorrhagic infection of the external ear was primarily or necessarily an infection of the middle-ear cleft: he believed it to be a blood-borne infection, the organism being in many cases a haemolytic streptococcus. The great thing to avoid in treatment was any puncturing of the drum, with infection of the middle ear. Dr. I. A. TUMARKIN said that it was the sulphuric acid in peroxide which was the mischievous element, and if only the sulphuric acid were diluted immediately before use with bicarbonate of soda, peroxide could be used with perfect safety, without any trouble to the skin of the meatus.

Mr. HORACE MATHER remarked that it seemed to be taken for granted that if an ear were syringed it was thereby cleaned completely; but in fact the inferior margin of the tympanic membrane, in the acute angle it formed with neighbouring structures, was difficult to cleanse, and inadequate cleansing led to reinfection. For clearance by syringing he used 70 per cent. spirit.

### Replies to Discussion

Dr. MACCORMAC, in reply, said that he agreed that where the scalp was one of the primary sites of the seborrhoeic process it should be treated, but he was not quite prepared to take the view, first put forward by Unna, that in these ear cases the treatment of the scalp was essential. All the methods of treatment turned on certain general principles, and he still envied the distinguished surgeon who came to one of the large teaching hospitals when he had to consult with him over a case and said, "The treatment of dermatological conditions is very easy. There are two applications. For everything above the umbilicus fomentations, and for everything below, calomel lotions"!

Mr. EWART MARTIN, also in reply, said that in his opening he had avoided the question of acute haemorrhagic otitis externa because it raised big issues. There were two types: one entirely local, probably an acute streptococcal infection, and the other definitely connected with middle-ear infection, and it was important to distinguish the one from the other. As for hydrogen peroxide, he had a great deal of evidence against its use unadulterated, and students were taught that if they employed it they must be sure it was got rid of after use.

## VITAMIN $B_1$ DEFICIENCY

At a meeting of the Royal Society of Tropical Medicine and Hygiene on January 20, with the president, Lieutenant-Colonel S. P. JAMES, in the chair, three papers on vitamin $B_1$ deficiency were read by Professor R. BRUNEL HAWES, Professor R. A. PETERS, and Dr. B. S. PLATT.

Professor Hawes, confining himself to acute fulminating beriberi or shōshin, said that patients afflicted with this came for treatment desperately ill, vomiting, breathless, restless, and groaning with epigastric pain. They were often pulseless, with demonstrably enlarged hearts, engorged cervical veins, and a rapid pulse of 120 to 130 per minute. The systolic pressure might be maintained, and dropped only in the late stages; the diastolic pressure, however, always fell with the onset of severe symptoms, and in dying patients frequently could not be determined. The use of large doses of vitamin $B_1$ in the treatment of patients such as those dying from beriberi had demonstrated a series of reactions that were unique, and altered many current ideas on the pathology of $B_1$ deficiency. The vitamin must be given by injection, and the effect of one injection lasted for many weeks. The clinical improvement occurred before any alteration was apparent in the blood pressure; the change in the latter was usually only noticed in the second hour or later. The diastolic pressure then rose, in many cases to well above normal, and the peripheral arteries palpably stiffened—a condition which might last a week. Diuresis did not take place until at least twenty-four hours after the general improvement, and the amount of water retention had no relation to the severity of the attack. Alterations in the amount of blood urea were due to a functional insufficiency of the kidneys consequent on the vascular collapse, and the recovery of renal function was sometimes delayed for many days. Pure vitamin $B_1$ deficiency had no relation to any anaemia: the diagnosis of any degree of such deficiency could be confirmed by the injection of an adequate amount of vitamin; the response was dramatically rapid.

Professor R. A. Peters stated that in vitamin $B_1$ deficiency in animals the first symptom was lack of appetite, followed naturally by loss of weight unless the animals were fed artificially. When the weight had fallen to some 65 per cent. of the maximum possible terminal symptoms appeared: these were decreased sugar tolerance and nervous symptoms; in pigeons opisthotonos developed. Changes in temperature also occurred, and there was usually lack of vision and bradycardia; excitement and sudden noises aggravated the symptoms. Sometimes there was oedema. Cure took place rapidly upon giving the vitamin. The symptoms of vitamin $B_1$ deficiency were mixed up with those of general inanition, but it was possible now to separate the two. The biochemistry of vitamin $B_1$ as now understood was really comprised in the statement that it was intimately concerned with the degradation of the important metabolite of intermediate carbohydrate metabolism—pyruvic acid ($CH_3.CO.COOH$).

$$\text{Glucon} \nearrow \\ \text{Glycogen} \nearrow \end{matrix} \rightarrow \text{Lactic acid} \xrightarrow{\text{Vit. } B_1} \text{Pyruvic acid} \rightarrow \text{degradation products } O_2 \text{ and } CO_2$$

The simplified scheme shown explained the relation of pyruvic acid to some intermediate metabolites, and indicated where the vitamin acted as part of the pyruvate oxidase system. The truth of the statement in the scheme could be tested by taking brain tissue from a vitamin-$B_1$-deficient pigeon showing opisthotonos, and by studying its respiration *in vitro* in suitable Ringer phosphate media containing sodium lactate. In the absence of vitamin $B_1$ pyruvic acid would gradually accumulate; with addition of $B_1$ (1/1,000 mg. per 3 c.cm.) the oxygen uptake of the preparation would increase. At the same time the pyruvate would disappear by oxidation. In normal brain tissue there was already too much vitamin present, so that the above statement could not be tested. It was to be noted

that the same vitamin which restored normality to the biochemistry of the tissue *in vitro* would rapidly cure the opisthotonos in the pigeon showing symptoms. Hence there was a direct connexion between these central symptoms and a fault in the enzyme system of the brain, due to lack of the vitamin. The only other tissue from the avitaminous bird in which these vitamin effects had been demonstrated *in vitro* experimentally was the kidney. This perhaps helped to explain oedema. Increased lactic acid could also be explained by this scheme when it was realized that pyruvate accumulated in the blood in $B_1$ avitaminosis in both pigeons and rats, because pyruvic acid was known to block the oxidation of lactate. The abnormal appearance of pyruvate was soon stopped by giving the animal vitamin $B_1$. The increased pyruvate in blood did not necessarily coincide precisely with the induction of the symptoms, but it was wrong to consider the symptoms as induced by the pyruvate. It was not yet certain whether the known biochemical fault in brain and kidney would explain the increased pyruvic acid in the blood, or whether there were still other unknown disturbances concerned.

The above gave a clear and logical picture of abnormalities in the avitaminous animal, with two exceptions: (1) the initial failure in appetite, occurring long before any other avitaminous manifestations, and (2) the increases in sugar tolerance found in the terminal stages of vitamin $B_1$ deficiency together with occasional disturbances in the regulation of the storage of glycogen in the liver. If these changes were considered to be primary defects due to lack of vitamin, then there was some other biochemical system, as yet unknown, with which vitamin $B_1$ acted; but if they were secondary to the initial fault in the brain, then some of them became intelligible. They would be the results of dysfunction of the essential brain cells concerned in carbohydrate regulation. This formed a useful working hypothesis.

Dr. B. S. Platt said there were substances normally present in human blood which bound bisulphite. They were found in increased amounts in the blood of cases of fulminating beriberi. Pyruvic acid was one of these substances. Increased amounts of it were shown to occur in trichloroacetic extracts of blood, urine, and cerebrospinal fluid taken from patients with fulminating beriberi. In uncomplicated cases of fulminating beriberi with increased amounts of pyruvic acid normal levels were restored in the course of ten to fifteen hours after intravenous administration of 5 mg. of pure vitamin $B_1$. It had been shown that vitamin $B_1$ was concerned in the intermediate metabolism of carbohydrates. Changes in amounts of metabolites in the blood in states of vitamin $B_1$ deficiency were considered to be evidences of disturbances arising in tissues whose carbohydrate metabolism involved vitamin $B_1$. The operation of some factors, fevers, increased intake of carbohydrates, muscular effort, when were known to affect beriberism in the body, led to accumulation of pyruvic acid in the blood in states of vitamin $B_1$ deficiency. It was suggested that the effects of accumulating factors contributed to the development of the various clinical types of beriberi. These effects might be more important in this respect than the differences in the state of vitamin $B_1$ deficiency. When accumulating factors were operative it was probable that well-defined changes only appeared after a comparatively long period of deficiency. Changes secondary to the failure of various organs and concomitant disease modified the clinical picture of beriberi. The effects of treatment with vitamin $B_1$ must be viewed with cognizance of the fact that damage of tissues might occur, especially in long-term deficiency, which could not be repaired merely by correcting the vitamin deficiency.

Miss Harriette Chick said that the work on experimental beriberi was very encouraging. Treatment in the early stages of deficiency showed that vitamin $B_1$ had everything to do with the appetite and the symptomatology of beriberi. She asked why the thiamine from the rice had such a considerably greater

Dr. Hawes, in reply, pointed out that defective standardization and insufficient dosage accounted for this.

Dr. J. Barcroft Anderson referred to Dr. Rowland's work, which had shown that continued deficiency of the vitamins of grain germ resulted in a diminution in the size of nerve cells and fibres, reduced striped muscle to one-third of its bulk in the intestine of rats, and produced degenerative changes in the kidney. Sir Leonard Rogers asked if the effect of $B_1$ injections had been determined in infantile beriberi. Dr. Platt said that infantile beriberi was probably the purest form of $B_1$ deficiency. Dr. William Hughes said the therapeutic results were excellent in children: after 1,500 units were injected it took about three days before the child cried.

Dr. H. M. Sinclair asked if the neuritis in beriberi was due to a deficiency of $B_1$ and whether it responded to therapy. Professor Hawes, in reply, said that in only a few cases was the nervous condition cured dramatically; in many cases the symptoms persisted for months. Obviously another factor was involved in the neuritis. In regard to infantile beriberi it was easier to give injections of $B_1$ to the mothers before childbirth and when breast-feeding the baby to prevent attacks. The mothers frequently had no signs of beriberi, yet the infants might develop an acute attack and die.

# Local News

## SCOTLAND

### Empire Exhibition, Glasgow, 1938

The Scottish Committee of the British Medical Association has co-operated with the Department of Health for Scotland in arranging for a demonstration of The Contribution of Scotland to Medicine at the forthcoming Empire Exhibition in Glasgow. This demonstration will be largely historical in character and will deal with the part played by individuals, medical schools, and hospitals. A special subcommittee has already held several meetings. The Scottish Secretary (Dr. K. W. Craig, 7 Drumsheugh Gardens, Edinburgh) will be glad to hear from any member of the Association who is prepared to lend interesting relics or photographs.

### Edinburgh University

The Senatus Academicus of Edinburgh University at a meeting on February [illegible] awarded the Cameron Prize for 1938 to Karl Landsteiner, M.D. Vienna, Member of the Rockefeller Institute for Medical Research, New York, in recognition of his researches in [illegible] and blood groups and of the influence of his discoveries on the practice of therapeutic blood transfusion. The Senatus also awarded the Alison Bequest Gold Medal to Donald Stanley Hutton, M.D. Madras, in recognition of the excellence of his thesis on "Pathological Studies on Splenomegaly."

### Scottish Committee on Nursing

The Department's Committee on Nursing, which is [illegible] the recruitment and conditions [illegible] further [illegible] was given by [illegible] Queen's [illegible] Associations Asso[illegible] institute [illegible] for [illegible] County

### Glasgow Western Infirmary

At the annual meeting of contributors to Glasgow Western Infirmary on February 11, when Sir John Stewart presided, Sir Hector Mechan said that the managers had in view the building of an extension to accommodate paying patients such as the other two infirmaries of Glasgow had. There was no possibility, however, of this being done at present owing to lack of funds. The report of the Infirmary showed that maintenance expenditure amounted to £106,340 and ordinary income to £[illegible],805, the deficit being met from unrestricted capital. During the year new heating plant was completed and heavy payments were made in extensions of the pathological block laundry and x-ray departments. The number of patients treated was 13,405, an increase of 272 on the previous year. The average number of patients per day was 891. Out-patients numbered 52,447, of whom 12,[illegible]0 were casualty cases and 14,057 were treated in the radiological department. The radium department serves a large area and the National Radium Commission has expressed its approval of the organization at the Infirmary by allocating three grammes of radium. It was hoped that the Carnarvon Institute of Medicine would be completed for the beginning of the winter session 1938-9.

## ENGLAND AND WALES

### Hospital Almoners' Association

The annual dinner of the Hospital Almoners' Association took place on February 5 at St. Ermin's Restaurant, London. Miss MacIntyre, chairman of the association, presided. The principal speaker was Sir E. Farquhar Buzzard, Regius Professor of Medicine at Oxford University and president of the Institute of Hospital Almoners, who, in proposing the toast of the association, spoke of the days before the introduction of almoners into the hospitals and the difference which their coming had made to medical work. He spoke also of the future development and extension of the social work and the possibility of the collected experiences being a valuable contribution to sociological research. Mrs. A. W. Tomkins, assistant almoner, St. Thomas's Hospital, responded for the association. Mr. R. Clutton, honorary surgeon to the Bristol Royal Infirmary, replied to the toast of "The Guests," which was proposed by Miss M. Streatfeild, assistant secretary of the Institute of Hospital Almoners. Among other guests present were Dr. Margaret Hogarth, assistant medical officer of health to the London County Council; Mr. E. Ridley, director of public assistance to the Middlesex County Council; Dr. Stallybrass, deputy medical officer of health for Liverpool and vice-president of Liverpool Medical Institute.

### Institute of Ray Therapy

The hopes and plans of many months and indeed of years were brought to fruition on February 2, when an extension of the Institute of Ray Therapy at Camden Road, London, was opened by the Princess Royal. This "hospital for electro-physical treatment," which in its subtitle was opened eight years ago, has hitherto functioned excellently well in most unsuitable cramped conditions. The new wing affords adequate if not abundant space, and it is declared that the hospital is now equal to anything of its kind in the country or on the Continent. Some account was given of the project when its purpose was announced at an earlier function (*Journal*, April 24, 1937, p. 868). The first floor of the extension provides for treatment by diathermy of several patients at a time. There is a section for the older forms of treatment by medical electricity, but with up-to-date appliances; an ancillary section furnished with much interesting apparatus for physical and remedial exercises. The ground floor is also to be equipped for electrotherapy when funds are available.

On the occasion of the opening the Princess Royal was received by the Mayor of St. Pancras, the president of the Institute, Lord Horder, and the hon. medical director, Dr. William Beaumont. After a number of presentations had been made, including the chairman of the governors, Lord Sempill, and the chairman of the medical advisory committee, Sir Robert Stanton Woods, a short address was read to the Princess by Lord Horder in asking her to declare the extension open. Lord Horder pointed out that the general hospitals, limited as they were by space and funds, could provide only for those conditions which were their first concern, such as acute illnesses, serious accidents, and complex and obscure diseases. They were unable to deal with many of the chronic diseases which gave rise to a great amount of incapacity. Illnesses which caused only partial incapacity had been sadly neglected in the past. Here was the value of the Institute of Ray Therapy, which filled many gaps and afforded treatment for minor ailments which reduced the efficiency of the worker. It aimed to prevent such ailments from becoming major maladies.

"We in the medical profession," Lord Horder continued, "know that in our history occasions arise when the clamour of the public brings about the adoption and amplification of certain methods of treatment which would otherwise remain of theoretical interest only. We recognize that to a great extent it is this urge which has been responsible for the great expansion, during the last few years, of physical medicine. No more striking argument could be put forward for the need of this institution than the fact that we are gathered to-day to see the opening of this extension, made necessary by the demand for still more accommodation and still greater advances in these methods, although already three thousand and more treatments are being given every week."

After the Princess Royal had declared the building open a prayer of consecration was offered by the Archbishop of York, a "human account" of the work of the Institute was given by Lord Sempill, and then an old patient and a present patient offered purses on behalf of old and present patients respectively, and other gifts were made. The Princess spent some time inspecting the new wing, and manifested particular interest in the gymnasium, the various electrical appliances, and the labour-saving devices to ease the work of the nursing staff. One feature of the new building is its admirable lighting by very large windows.

### Scientific Treatment of Delinquency

The Institute for the Scientific Treatment of Delinquency has acquired a house, No. 8, Portman Street, W., for the purpose of a clinic, and the opening ceremony took place on February 9 in the presence of the Mayor of St. Marylebone, representatives of the Home Office, and a number of prominent magistrates and medical men. The clinic contains departments for vocational guidance, graphological research, intelligence tests, and the measurement of temperament, for which last purpose an instrument known as the McDougall-Schuster dotting machine excited some interest. The clinic is intended to be used for investigation into the various forms of mental maladjustment. About seven years ago a scientific investigation was carried out on a number of prisoners in Holloway by a psychologist on behalf of the Medical Research Council with assistance from the Home Office. As a result it was considered desirable to have a permanent centre for the examination and treatment of cases of anti-social conduct, especially among young people coming into conflict with the law, and the movement just started has been widened into an organization for research into the causes, treatment, and prevention of anti-social conduct of all kinds.

Lord Roche, Lord Justice of Appeal, in declaring the clinic open, said that in his view the first function of such an institute was to determine with more certainty than

that the same vitamin which restored normality to the biochemistry of the tissue *in vitro* would rapidly cure the opisthotonos in the pigeon showing symptoms. Hence there was a direct connexion between these central symptoms and a fault in the enzyme system of the brain, due to lack of the vitamin. The only other tissue from the avitaminous bird in which these vitamin effects had been demonstrated *in vitro* experimentally was the kidney. This perhaps helped to explain oedema. Increased lactic acid could also be explained by this scheme when it was realized that pyruvate accumulated in the blood in $B_1$ avitaminosis in both pigeons and rats, because pyruvic acid was known to block the oxidation of lactate. The abnormal appearance of pyruvate was soon stopped by giving the animal vitamin $B_1$. The increased pyruvate in blood did not necessarily coincide precisely with the induction of the symptoms, but it was wrong to consider the symptoms as induced by the pyruvate. It was not yet certain whether the known biochemical fault in brain and kidney would explain the increased pyruvic acid in the blood, or whether there were still other unknown disturbances concerned.

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Miss HARRIETT CHICK said that the work just presented was very encouraging, inasmuch as it gave overwhelming evidence that vitamin $B_1$ had everything to do with the development and symptomatology of beriberi—at least in this particular form. She asked why the therapeutic results in the past had been so contradictory. Professor HAWES, in reply, pointed out that defective standardization and insufficient dosage accounted for this.

Dr. J. BARCROFT ANDERSON referred to Dr. Rowland's work, which had shown that continued deficiency of the vitamins of grain germ resulted in a diminution in the size of nerve cells and fibres, reduced unstriped muscle to one-third of its bulk in the intestine of rats, and produced degenerative changes in the kidney. Sir LEONARD ROGERS asked if the effect of $B_1$ injections had been determined in infantile beriberi. Dr. PLATT said that infantile beriberi was probably the purest form of $B_1$ deficiency. Dr. WILLIAM HUGHES said the therapeutic results were excellent in children; after 1,500 units were injected it took about three days before the child cried.

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## SCOTLAND

### Empire Exhibition, Glasgow, 1938

The Scottish Committee of the British Medical Association has co-operated with the Department of Health for Scotland in arranging for a demonstration of "The Contribution of Scotland to Medicine" at the forthcoming Empire Exhibition in Glasgow. This demonstration will be largely historical in character and will deal with the part played by individuals, medical schools, and hospitals. A special subcommittee has already held several meetings. The Scottish Secretary (Dr. R. W. Craig, 7, Drumsheugh Gardens, Edinburgh) will be glad to hear from any member of the Association who is prepared to lend interesting relics or photographs.

### Edinburgh University

The Senatus Academicus of Edinburgh University at a meeting on February 11 awarded the Cameron Prize for 1938 to Karl Landsteiner, M.D.Vienna, a member of the Rockefeller Institute for Medical Research, New York, in recognition of his researches on iso-haemagglutinins and blood groups, and for the influence of his discoveries on the practice of therapeutic blood transfusion. The Senatus also awarded the Straits Settlements Gold Medal to Thottakat Bhaskara Menon, M.D.Madras, D.Sc., for the excellence of his thesis on "Pathological Studies on Splenomegaly."

### Scottish Committee on Nursing

The Departmental Committee on Nursing, which is inquiring into the recruitment and the terms and conditions of service of nurses in Scotland, has held two further meetings. At these meetings oral evidence was given by representatives of the Scottish Branch of the Queen's Institute of District Nursing, the Scottish Matrons' Association, Edinburgh Corporation, the Astley Ainslie Institution, Edinburgh, the General Board of Control for Scotland, Stirling Royal Infirmary, and Fife County Council.

### Glasgow Western Infirmary

At the annual meeting of contributors to Glasgow Western Infirmary on February 11, when Sir John Stewart presided, Sir Henry Mechan said that the managers had in view the building of an extension to accommodate paying patients such as the other two infirmaries of Glasgow had. There was no possibility, however, of this being done at present owing to lack of funds. The report of the Infirmary showed that maintenance expenditure amounted to £104,349 and ordinary income to £77,860, the deficit being met from unrestricted capital. During the year new heating plant was completed and heavy payments were made in extensions of the pathological block, laundry, and *x*-ray departments. The number of patients treated was 13,465, an increase of 272 on the previous year. The average number of patients per day was 661. Out-patients numbered 52,447, of whom 12,734 were casualty cases, and 14,657 were treated in the radiological department. The radium department served a large area, and the National Radium Commission had expressed its approval of the organization at the Infirmary by allocating three grammes of radium. It was hoped that the Gardiner Institute of Medicine would be completed for the beginning of the winter session 1938–9.

## ENGLAND AND WALES

### Hospital Almoners' Association

The annual dinner of the Hospital Almoners' Association took place on February 5 at St. Ermin's Restaurant, London. Miss Macintyre, chairman of the association, presided. The principal speaker was Sir E. Farquhar Buzzard, Regius Professor of Medicine at Oxford University and president of the Institute of Hospital Almoners, who, in proposing the toast of the association, spoke of the days before the introduction of almoners into the hospitals and the difference which their coming had made to medical work. He spoke also of the future development and extension of the social work and the possibility of the collected experience being a valuable contribution to sociological research. Mrs. A. W. Tomkins, assistant almoner, St. Thomas's Hospital, responded for the association. Mr. H. Chitty, honorary surgeon to the Bristol Royal Infirmary, replied to the toast of "The Guests," which was proposed by Miss M. Streatfield, assistant secretary of the Institute of Hospital Almoners. Among other guests present were Dr. Margaret Hogarth, assistant medical officer of health to the London County Council; Mr. E. Ridley, director of public assistance to the Middlesex County Council; Dr. Stallybrass, deputy medical officer of health for Liverpool and vice-president of Liverpool Medical Institute.

### Institute of Ray Therapy

The hopes and plans of many months, and indeed of years, were brought to fruition on February 5, when an extension of the Institute of Ray Therapy in Camden Road, London, was opened by the Princess Royal. This "hospital for electro-physical treatment," which is its subtitle, was opened eight years ago, but hitherto its excellent work has been done under extremely cramped conditions. The new wing affords adequate, if not abundant, space, and it is declared that the hospital is now equal to anything of its kind in this country or on the Continent. Some account was given of the project when its purpose was announced at an earlier function (*Journal*, April 24, 1937, p. 884). The first floor of the extension provides for treatment by diathermy of several patients at a time. There is a section for the older forms of treatment by medical electricity, but with up-to-date appliances, and another section furnished with much interesting apparatus for physical and remedial exercises. The ground floor is also to be equipped for electrotherapy when funds are available.

On the occasion of the opening the Princess Royal was received by the Mayor of St. Pancras, the president of the Institute, Lord Horder, and the hon. medical director, Dr. William Beaumont. After a number of presentations had been made, including the chairman of the governors, Lord Sempill, and the chairman of the medical advisory committee, Sir Robert Stanton Woods, a short address was read to the Princess by Lord Horder in asking her to declare the extension open. Lord Horder pointed out that the general hospitals, limited as they were by space and funds, could provide only for those conditions which were their first concern, such as acute illnesses, serious accidents, and complex and obscure diseases. They were unable to deal with many of the chronic diseases which gave rise to a great amount of incapacity. Illnesses which caused only partial incapacity had been sadly neglected in the past. Here was the value of the Institute of Ray Therapy, which filled many gaps and afforded treatment for minor ailments which reduced the efficiency of the worker. It aimed to prevent such ailments from becoming major maladies.

"We in the medical profession," Lord Horder continued, "know that in our history occasions arise when the clamour of the public brings about the adoption and amplification of certain methods of treatment which would otherwise remain of theoretical interest only. We recognize that to a great extent it is this urge which has been responsible for the great expansion, during the last few years, of physical medicine. No more striking argument could be put forward for the need of this institution than the fact that we are gathered to-day to see the opening of this extension, made necessary by the demand for still more accommodation and still greater advances in these methods, although already three thousand and more treatments are being given every week."

After the Princess Royal had declared the building open a prayer of consecration was offered by the Archbishop of York, a "human account" of the work of the Institute was given by Lord Sempill, and then an old patient and a present patient offered purses on behalf of old and present patients respectively, and other gifts were made. The Princess spent some time inspecting the new wing, and manifested particular interest in the gymnasium, the various electrical appliances, and the labour-saving devices to ease the work of the nursing staff. One feature of the new building is its admirable lighting by very large windows.

### Scientific Treatment of Delinquency

The Institute for the Scientific Treatment of Delinquency has acquired a house, No. 8, Portman Street, W., for the purpose of a clinic, and the opening ceremony took place on February 9 in the presence of the Mayor of St. Marylebone, representatives of the Home Office, and a number of prominent magistrates and medical men. The clinic contains departments for vocational guidance, graphological research, intelligence tests, and the measurement of temperament, for which last purpose an instrument known as the McDougall-Schuster dotting machine excited some interest. The clinic is intended to be used for investigation into the various forms of mental maladjustment. About seven years ago a scientific investigation was carried out on a number of prisoners in Holloway by a psychologist on behalf of the Medical Research Council, with assistance from the Home Office. As a result it was considered desirable to have a permanent centre for the examination and treatment of cases of anti-social conduct, especially among young people coming into conflict with the law, and the movement just started has been widened into an organization for research into the causes, treatment, and prevention of anti-social conduct of all kinds.

Lord Roche, Lord Justice of Appeal, in declaring the clinic open, said that in his view the first function of such an institute was to determine with more certainty than

could be done at present into which of the categories of criminals a convicted person was properly to be placed, whether he belonged at the one extreme to those who offended against the law because of a weakness or infirmity which might be cured, or, at the other, to those who were determined to live preying on society. The second function was, by the care and skill of psychiatrists, to endeavour to remove the cause which had led the offender to commit the offence. His own experience of seventeen years as a judge in the King's Bench Division, spending a considerable proportion of his time trying criminal cases on Assizes and at the Central Criminal Court, was that administrators of the law badly needed such an institute and could derive essential help from it. He hoped that those in judicial authority would increasingly seek the aid of the right judgment which such an institute could in appropriate cases afford. Lord Roche went on to say that there was a certain suspicion of "odium medicum" attaching to this as to all comparatively new branches of medical science. "There is a certain justification for this attitude in general because new developments have a way of attaching to them exponents who make extravagant claims or may be even charlatans. Believe me, there is nothing of the sort here. This Institute is administered and served by men of high scientific attainments, having the honesty and humility that impel them to recognize and observe the due limits of their science and their art. You need have no fear that you are supporting cranks or charlatans; the whole thing rings true." He added that one of the great merits of the new home of the Institute was that it seemed in its arrangement and appearance to wear the respectable air of a series of adequate consulting rooms. Dr. E. T. Jensen, chairman of the Institute, in expressing thanks to Lord Roche, suggested that this movement was only on the threshold of what might prove to be a large national institute of criminology. Dr. Denis Carroll described the work of the Institute, of which he had been one of the chief directive forces. The courts referred to the Institute a number of delinquents, who were tested for intelligence and in other respects, and an impartial review was given to the court as to the delinquent's mental state and its relevance to the offence with which he was charged. Some were found to be suffering from various diseases, physical or mental, and among the mental conditions certain eccentricities and some instances of psychopathic personality were to be classed. Of some 500 persons seen since the Institute began its work roughly one-half had been treated in one way or another. It was necessary to wait at least ten years before talking about successes, but so far only twenty relapses were known. Dr. Edward Glover, chairman of the Scientific Committee of the Institute, also spoke to a vote of thanks, after which the building was inspected by the large company present.

### Co-ordination of Newcastle Hospitals

Newcastle-upon-Tyne, following the example of a number of other large provincial centres such as Manchester and Liverpool, has set up a Newcastle Hospitals Joint Advisory Board, with representation on it of the municipality, the voluntary hospitals, and King's College. At the opening meeting Lord Eustace Percy, Rector of King's College, was chosen to be its first chairman. The purpose of the board is to act as a joint body for consultation between the corporation and the voluntary hospitals, and it is empowered to advise the constituent bodies on all matters affecting the hospital services of the city, both municipal and voluntary, so as to promote the best use of all available hospital facilities in the development of an efficient service for the city as a whole. Matters to be discussed may include the provision of new in-patient, out-patient, and casualty facilities and new bed accommodation, buildings, and equipment, and the extension of existing facilities; the principles underlying the medical and surgical staffing of hospitals concerned; financial arrangements between municipal and voluntary hospitals for services undertaken; medical education and research; and "all matters of common interest to municipal and voluntary hospitals, whether directly or indirectly connected with the hospital services." The founder members, elected for three years, are the Lord Mayor and nine other members of the City Council, together with the medical officer of health, Dr. John A. Charles; Lord Eustace Percy, Sir Robert Bolam, Professor R. Bramble Green, and Mr. H. B. Saint, representing King's College; Sir Ralph Mortimer, Professor W. E. Hume, Mr. F. C. Pybus, Dr. S. Whately Davidson, Councillor W. Cook, and Mr. J. H. Burn, representing the Royal Victoria Infirmary; Dr. W. MacMurray, the Hospital for Sick Children; Professor R. P. Ranken Lyle, the Princess Mary Maternity Hospital; Mr. L. H. Booth, the Eye Hospital; Mr. S. Phillips, the Throat, Nose and Ear Hospital; and Dr. J. C. Spence, the Babies' Hospital and Mothercraft Centre. The board has power to co-opt, without voting power, any persons possessing special knowledge which would be of material assistance to the board or its subcommittees.

### Bradford Health Services

At a public dinner in Bradford last week the Lord Mayor, Alderman H. Hudson, asked if any city in the kingdom could equal Bradford's record as a pioneer in matters pertaining to the health and well-being of the people. In 1920, ten years before any county borough or county council possessed such a hospital, Bradford opened a municipal general hospital. It appointed a school medical officer in 1894, thirteen years before Parliament made such appointments compulsory. As long ago as 1904 Bradford was agitating for powers to feed children who went to school underfed, and when the Education (Provision of Meals) Act, 1906, became law Bradford was the first authority to put it into effect. In 1907 the first open-air school in England was opened there; the first municipal maternity hospital was opened there more than twenty years ago; and municipal midwives were appointed in the city in 1917. Bradford used to have a school for blind children, but as a result of the vigorous steps taken the school had been closed because blindness among children in Bradford was now rare.

### Fracture Services

Sir Kingsley Wood, the Minister of Health, recently visited Ipswich and inspected the council's housing estate, the health clinic, and other institutions, and performed the opening ceremony for the new orthopaedic out-patient department and fracture clinic at the East Suffolk and Ipswich Hospital. Speaking at the Town Hall, Sir Kingsley said that a substantial proportion of incapacity in the community was represented by fractures and allied injuries caused by accidents, whether in industry, on the road, or in the home. To-day well over 200,000 fractures were treated annually in hospitals up and down the country. It was of first importance that the organization should be improved and the best and most modern forms of treatment devised and made available. Throughout the country fracture services were needed which would place within the reach of every injured person the benefit of treatment. By this means we could mitigate suffering, reduce the period of disablement, and do much to secure restoration of working capacity. There was a general demand for a better service, inasmuch as only about a quarter of the cases treated were dealt with in departments organized in accordance with modern principles. Industry was particularly interested in this development because experience had shown that the period of disability could be enormously reduced by modern methods of treatment. Workers could be saved much suffering and discomfort and the employers saved much dislocation of their business. He was glad to know that in a number of leading industries of the country financial support was being given to schemes for improved fracture services.

# Correspondence

## An English Pneumonia Service

SIR,—As was pointed out in a leading article (*Journal*, January 8, p. 76), good results have been obtained in America from the serum treatment of pneumonia. In view of the high mortality in this country it was felt that the Circular 1499 and the Memorandum of the Ministry of Health (Med. 189) upon this matter should be acted upon. Incidentally, neither the circular nor the memorandum mentions pneumonia sera. After consultation with some keen practitioners in my area I arranged to have available some Type I, Type II, and mixed Types I and II serum, and a service for the typing of pneumococci. Some dramatic results were quickly obtained, and a demand was made for the serum to be available day and night; this was arranged. So far as I am able to tell—and I hope someone will correct me if I am wrong—we, as a county council, have no power to supply pneumonia serum. Obviously with serum at 25s. per 10,000 units we were heading for a surcharge of some dimensions when patients (some agricultural labourers) were unable to meet bills of £10 to £12 or more. We were therefore forced to charge more for the serum than it cost us in order to prevent a loss on our accounts. It might be asked, "Why not leave the practitioners to get their own serum?" At 25s. per 10,000 units for a serum which deteriorates rapidly, they just won't. So it is left to the public authority to sustain another puling waif of curative medicine!

The Holland County Council pneumonia service began in January, 1936; the Ministry's circular was received in October, 1935. The routine method used is to prepare and stain a film of sputum immediately upon receipt; this gives information as to whether the pneumococcus is present or not, and if present in what numbers, and proves helpful when doing the actual typing. In view of the fact that half the pneumococci belong to either Type I or Type II, it is our custom when pneumococci are present to examine first for these two types.

Small flecks of sputum are separately well mixed on marked slides with Types I and II diagnostic anti-pneumococcus sera (rabbit), the amount of sera depending on the consistency of the sputum. A small loopful of alkaline methylene-blue stain is then added and mixed. Cover slips are applied, the slides inverted and pressed out on blotting paper to ensure a thin film, and the edges sealed with vaseline. These preparations are then examined with the oil-immersion lens under artificial blue light, the condenser diaphragm being regulated to give the most satisfactory illumination. In the event of pneumococci being found in a stained film and the Neufield reaction not being obtained in either of these two cover-slip preparations, recourse is had to the group mixtures of the other various types of anti-pneumococcus diagnostic sera, using the same technique.

It is important when running a service of this kind to impress general practitioners with the necessity for submitting only fresh specimens of sputa—that is, the specimens are to be examined within two hours of production. Autolysis of the capsule takes place after this period. Specimens that cannot be examined within two hours should be kept on ice, and then may be examined up to twenty-four hours later. Some practitioners when unable to obtain a typing test give anti-pneumococcus sera Types I and II mixed as a precautionary measure until they can have such a test carried out.

The call upon the service is almost confined to the winter months, especially during influenza epidemics. In this small scattered rural county of 95,000 population we have carried out approximately fifty examinations of sputum at a cost of 5s. per test. It is not possible to give exact figures, as records of the typing were not kept in the first few weeks of the scheme, and our consulting staff sometimes come to the laboratory at night to type sputum of which no record is kept. For us this work has been in the nature of an experiment, but there is no doubt that many lives could be saved if it were extended to every authority with a laboratory. We are, of course, greatly handicapped by having no powers to supply sera to patients free of charge or at a greatly reduced price. To type without keeping and supplying serum is useless. Will the Ministry allow us to take advantage of the knowledge gained by our American colleagues? Surely we have passed the stage of collecting statistics; may we get on with the job?—I am, etc.,

W. G. BOOTH,
Holland, Lincs, Feb. 7. County Medical Officer of Health.

## Recovery in the Spinal Cord

SIR,—Dr. F. A. Pickworth (February 5, p. 307) is apparently dissatisfied with my statement of the requirements for recovery of function in the spinal cord (*British Medical Journal*, December 18, 1937, p. 1242), and says summarily: "Recovery of function in the cord is primarily dependent upon the restoration of blood supply to ischaemic areas."

I must point out that I placed absence of interference with the circulation in my first set of conditions for recovery, and put it on an equality with, not subordinate to, absence of severe damage to the structure of the cord. That is its rightful position. It cannot be more important than structural continuity. Restoration of blood supply avails little if nearly all the fibres of the cord are divided.

In regard to non-surgical diseases of the cord Dr. Pickworth's insistence upon the restoration of blood supply to ischaemic areas is not of much practical help. We do not yet know whether in such diseases there are any ischaemic areas (in his sense) or whether, if there are, the ischaemia is of sufficient degree to cause interruption of function and structural degeneration, or whether recovery of the cord follows restoration of the blood supply alone. Dr. Pickworth has unguardedly allowed himself to state as fact what is merely inference from unconfirmed theory. If ischaemic areas in his sense are present in the cord in subacute combined degeneration or in the acute phases of disseminated sclerosis, or if they occur in consequence of infection of the bladder, ischaemia is at most only the means by which more primary factors exert their influence, and for practical purposes we are concerned with the more primary factors. Mott's experiment, to which Dr. Pickworth refers, is of very limited application to the diseases mentioned in my talk or to any condition involving paraplegia with spasticity.

Relative integrity of the blood supply to the affected parts of the cord is one of a number of factors essential to recovery of function, but it would be wrong in the present state of our knowledge to call it "primary" and blind ourselves to the equal practical importance of others. Different requirements assume special importances in different conditions.—I am, etc.,

London, W.1, Feb. 14. JAMES PURDON MARTIN.

## A Warning against Excision of the Patella for Recurrent Dislocation

SIR,—Recently Mr. Ralph Brooke published[1] [2] and showed the results of excision of the *fractured* patella. Since that time I have seen two cases in which different surgeons had removed the patella for *recurrent dislocation*. In each the symptoms of recurrent dislocation of the extensor apparatus continued after the operation.

*Case 1.*—A maidservant, aged 23, had begun six years previously to suffer from attacks of locking of the left knee with outward displacement of the knee-cap. The patella had been excised on this account thirteen months before I saw her. A month after operation the attacks of locking had returned, with all their previous characteristics, except that the patella itself was absent. Elmslie's operation of re-alignment of the extensor apparatus was performed five months ago, and there has been no recurrence of the symptoms since.

*Case 2.*—A girl, aged 16, a leather worker, had first experienced giving way of the right knee, with locking, two years before. This had continued to happen about once a week, sometimes in bed, and she had discovered that the event was accompanied by outward displacement of the knee-cap. Reduction would be achieved by a kicking movement. She had been treated at first with a walking caliper and later by excision of the patella. Six or seven weeks after the operation the symptoms had returned, attacks occurring with about the same frequency as before. Re-alignment of the extensor apparatus has been advised.

Neither patient showed knock-knee or any radiological abnormality of the external femoral condyle.

This note is written as a matter of urgency, in the hope that surgeons contemplating removal of the patella for recurrent dislocation will be dissuaded, and perform rather a physiological operation of re-alignment of the extensor apparatus on the lines of Elmslie's[3] operation.—I am, etc.,

H. JACKSON BURROWS, M.D., F.R.C.S.

London, W.1, Feb. 7.

## Throat Carriers in Midwifery Practice

SIR,—We were disappointed when our original paper (*Journal*, October 23, 1937, p. 811), which was meant to be provocative, failed to elicit any correspondence, and we are, therefore, still more disappointed when we find that Dr. Dora Colebrook's most interesting criticism (January 29, p. 253) has failed in a similar manner. We feel, however, that we cannot let some of her remarks pass unchallenged.

In the first place, with regard to the nomenclature we employed, since the definition which she has quoted was put forward knowledge has increased, and we feel that *Streptococcus pyogenes* may now be defined as a $\beta$ haemolytic streptococcus which is pathogenic to man. It will usually fall into Group A of the Lancefield classification, but there is evidence to suggest that organisms which fall into other groups of this classification may cause human infections. It is in this matter that we are inclined to disagree with Dr. Colebrook about the value of grouping alone. The technique employed in this laboratory is to attempt to type the organisms by agglutination, and if agglutination fails, to determine the group. By this method one detects and includes among the known pathogens certain types not in Group A without ignoring other streptococci, which, though not yet identified as types, can be classed as belonging to Group A and are, therefore, potentially pathogenic. We cannot follow Dr. Colebrook's argument that the name Group A without any prefix is a sufficient identification of the pathogenic streptococci. We feel that if we have been confusing then the point should be clarified, especially as on questioning practitioners recently we find that not only does the name Group A convey nothing to them but neither does *Str. pyogenes*, whereas the term haemolytic streptococcus is immediately recognized; this is, of course, most undesirable.

With regard to her second point, there is a good deal of evidence to suggest that a person whose throat is clinically normal is not infectious even though *Str. pyogenes* can be cultivated from it. In ordinary practice such persons would be allowed to mix with other people, as is shown by the fact that 80 per cent. of patients who are discharged from fever hospitals are still carrying *Str. pyogenes* in their throats. The fact that a person can carry *Str. pyogenes* without being infectious must be accepted, and the following two examples are of interest, allowing, of course, that one swallow does not make a summer.

Two years ago, during a ward epidemic, the ward sister contracted a clinical tonsillitis due to infection with *Str. pyogenes*, Type 6, a strain which was one of the causes of the outbreak. She was off duty for some weeks, but was allowed to return to work when her throat was clinically normal, although bacteriological examination showed that *Str. pyogenes* was still present. Eighteen months later she was still carrying the organism in her throat, and there had been no cases of Type 6 infection in the interval, and it is the custom in the hospital to swab *all* cases of colds, sore throats, or septic conditions. It may be stressed that this was in spite of the fact that the ward of which she was in charge was for children.

Some three years ago, in a certain public school, all the boys in one house were swabbed during an investigation, in the course of which swabs from one boy were found to give a profuse growth of *Str. pyogenes*, Type 14. Again routine swabs are done of all colds and tonsillitis in the school, and no cases of infection with Type 14 have been noted, although this boy's swab was still positive two terms later.

We do agree, however, that there is no proven evidence of this fact other than personal observations and experiences, but we hope to be able to add some further knowledge to the subject in the near future. With regard to midwifery practice, where not only is the subject more susceptible but the question of compensation looms largely on the horizon, one cannot afford to risk its being said that a patient has been *knowingly* exposed to a person who has a swab-positive throat. Dr. Colebrook has, we are afraid, misunderstood exactly what our procedure is. We do recommend the swabbing of all contacts of cases of puerperal sepsis. We do recommend swabbing of all midwifery attendants who have had a cold or sore throat or who have been in contact with a known case of infection of any kind. Finally, we do recommend the swabbing of all midwifery attendants who have a clinically abnormal throat, but we do not recommend the witch-hunting process of the indiscriminate swabbing of persons who, even if found to be positive, we believe to be in ninety-nine cases out of a hundred perfectly harmless.

We believe that persons whose throats show streptococci are not infectious except in the following cases: (1) If there is a chronic focus of infection present, such as an infected sinus or chronically infected tonsils; not all of these are in fact infectious, but the chance in favour of their being so is much greater than in the clinically normal cases. (2) When the person is recovering from a recent infection. (3) When a person is acutely infected. (4) When the person has recently been in

[1] Brooke, R. (1936–7). *Proc. roy. Soc. Med.*, **30**, 203 (Orthopaedic Section, p. 3).
[2] Brooke, R. (1936–7). *Brit. J. Surg.*, **24**, 733.
[3] Malkin, S. A. S. (1932). *British Medical Journal*, **2**, 91.

contact with someone else who is acutely infected. With regard to the standard of normality we are, therefore, compelled to rely upon the opinion of an experienced oto-rhino-laryngologist.

In conclusion, we should like to say how much we appreciated Dr. Colebrook's most critical letter and to point out once again what both communications have already stressed—"all pyrexias in the puerperium must be regarded as streptococcal in origin until proved to the contrary by a bacteriological examination."—We are, etc.,

J. L. MILLER WOOD.
F. E. CAMPS.

Chelmsford, Feb. 8.

## Temporary Sterilization by X Rays

SIR,—Although temporary sterilization by *x* rays is possible the length of time it lasts is so uncertain that those of us who have had experience of deep *x*-ray therapy have given up this method for other more certain ones. It is extremely difficult to induce temporary amenorrhoea of a definite length of time in a very young subject. In my own experience I find that I can promise an amenorrhoea lasting two years or more in a patient of over 43 years if I give a 40 per cent. to 49 per cent. unit skin dose to each ovary. The same dose in a patient of 25 may have to be repeated in three or four months to induce an amenorrhoea of even five or six months' duration. Temporary sterilization by *x* rays in a young married woman is too uncertain to justify what, after all, is a somewhat drastic treatment. The application of an intra-uterine dose of radium for the same purpose has been suggested, but here again the results are very uncertain. Indeed, there are cases in which, after a full cancer dose—which is at least seven or eight times as great as the dose used for menorrhagia—the patient has later on conceived and been delivered of a full-time child.

I have frequently induced amenorrhoea in older patients suffering from metropathia haemorrhagica or small fibromyomata, and among these, occasionally, the periods have recurred some years after. But for the first few months after treatment I have always advised contraceptive measures in addition when it was advisable that the patient should not become pregnant—I am, etc.,

London, W.1, Feb. 14. L. MARTINDALE.

## Contraceptives and Fertility

SIR,—The Medical Subcommittee of the National Birth Control Association has ventured to contest Mr. V. B. Green-Armytage's statement that "contraceptive measures in the early days of marriage were inimical to pregnancy at a later date," and has declared its inability to find evidence in support of his statement. May I be allowed to assist the subcommittee? In the monograph on sterility and conception by Gardner Child (1931, p. 89) it is stated: "When artificial means are used to prevent conception and are indulged in for any length of time they are quite liable to create a habit of sterility." In the London Medical Society *Transactions* (1936, **59**, 120) Mr. Lane Roberts states: "At times the endocervical secretion becomes hostile to spermatozoa because of the mechanical viscosity resulting from either poor cervical drainage or an endocervicitis"; and (p. 130): "To take at random some infertility factors found in one series of one hundred cases, in the woman, in 28 per cent. endocervicitis was the factor." Professor James Young (1933, *Textbook of Gynaecology*, third edition) states that chronic endocervicitis is a cause of sterility of uncertain importance; "it may prevent insemination by leading to an inflammatory blockage of the canal or by producing discharges which are hostile to the spermatozoa." Eden and Lockyer's *Gynaecology* (fourth edition, by Beckwith Whitehouse) states: "There can be little doubt that the lesion [erosion], accompanied as it is with alteration in the amount and character of the cervical secretion, is a cause of diminished fertility."

It can hardly be doubted that the practice of contraception, with all its mechanical, chemical, and infective possibilities, is capable of causing chronic changes in the cervix. Contraception involves insertion of the finger, and contamination from handkerchiefs must sometimes occur.—I am, etc.,

London, W.1, Feb. 13. GEORGE H. ALABASTER.

SIR,—When the secretary of the National Birth Control Association submitted her apologia in the *Journal* of February 12 she picked out one line of a verbatim report and neglected to refer to the answer which I supplied when she wrote to me on January 25 on the matter. It was as follows:

In answer to your letter of the 25th instant, I did use the words which you quote at the meeting of the West London Medico-Chirurgical Society, and my conviction is as stated for the following reasons:

(*a*) That if the hymen is unruptured at the time of marriage, insertion of jellies or medicated pessaries upsets the physiological *p*H of the vagina, with the result that the cervix is bathed in an acid medium far lower than *p*H 4 for some hours. The result is irritation of the external os with subsequent erosion and endocervicitis.

(*b*) Should in the early years or months of matrimony rubber caps with a containing soluble pessary be applied to the cervix for a matter of twelve hours or longer the resulting effect is the same as in (*a*).

(*c*) I have noted this particularly during the last twenty years, during which time I have seen over 800 cases of sterility. A large number of these have used (*a*) or (*b*).

(*d*) In the discussion I stated that if for medical or other reasons contraception was necessary in the early months of matrimony it should be relegated to the use of a condom by the husband and not by the insertion of chemicals of any kind by the woman.

(*e*) It is of course well recognized and taught psychologically that the early and continued use of contraceptives, either by husband or wife, diminishes libido and orgasm in both parties.

(*f*) I also referred to the statement by Professor Miles Phillips which appeared in the *B.M.J.* a few weeks ago under the heading of "Endometrioma" in a discussion at the North of England Gynaecological Society, stating the opinion that the early use of contraceptives was responsible for the increasing number of cases of endometrioma which are seen to-day in young people.

(*g*) There are other moral and minor factors with which I need not detain you, but I think you will find that experienced gynaecologists, male or female, will agree with my statement that contraceptive measures in the early days of marriage are inimical to pregnancy at a later date.

—I am, etc.,

London, W.1, Feb. 11. V. B. GREEN-ARMYTAGE.

## Time for Midwifery

SIR,—There is still much nonsense written about maternal mortality in the Press, but surely the statement of Dr. John Elam in the *Journal* of February 5 (p. 310), that "the basic reason of inexpert midwifery is only want of time," is the most absurd. Time without knowledge and skill will not cure inexpert midwifery. If he means that practitioners will not take time over their cases the statement is objectionable.

Reform of maternity work has begun at the wrong end. A great deal of that work—probably 50 per cent. at least—has been taken out of the hands of the general practitioner and has been handed over to less-experienced midwives, with no better results. Maternity work used to be considered the general practitioner's specialty and was the foundation of his practice. What is at fault is the training of the student—the lack of training after graduation. A few years ago I wrote in the *British Medical Journal* that every practitioner who intended to practise midwifery should either have had a term as house officer in a maternity hospital or an assistantship with a practitioner who had a large midwifery practice. This elicited no criticism.—I am, etc.,

Erdington, Birmingham, Feb. 7. ROBERT ANDERSON.

## Expulsion of Placenta Praevia in Advance of Foetus

SIR,—With reference to the recent correspondence on this subject the following case may be of interst.

An eight-months-pregnant Burmese woman, aged 29, who had given normal birth to six children, was admitted to hospital on September 27. The pregnancy had been normal except for slight bleeding for a day in July. On the day of admission pains had begun at 6 a.m., and were accompanied by some haemorrhage. Twelve hours later the placenta was ejected with profuse bleeding. The cord was then tied but not cut, and the patient was removed by bus to a hospital ten miles distant. On the journey the cord snapped, and the placenta was thrown into the jungle by the bus conductor. On admission to the second hospital at 10 p.m. the patient had collapsed and was almost pulseless. Uterine contractions were present and foetal heart sounds absent. Vaginal inspection revealed no bleeding, but there was evidence of recent haemorrhage. The cervix was fully dilated with the head presenting, and an arm and the severed cord prolapsed—an appearance suggestive of a twin labour in which the first child had been born. After catheterization, the administration of intravenous glucose-saline, and amputation of the foetal arm, a dead child was delivered by the breech. Intrauterine glycerin, anti-streptococcal and anti-tetanus sera, intravenous calcium and soluseptasine supplemented the usual treatment for shock. The following day a piece of membrane was passed and the general condition of the patient was improved. Later, however, fever developed, and the patient died on the sixth day.

—I am, etc.,

Rangoon, Dec. 1, 1937. KENNETH LINDSAY.

## Technique of Blood Transfusion

SIR,—The article on methods of giving blood transfusion by Dr. H. F. Brewer in the *Journal* of January 29 (p. 241) prompts me to refer to a few practical points.

Apropos of technique, I can only speak from experience of three methods—namely, (*a*) the funnel gravitation method; (*b*) Keynes's flask; (*c*) Jubé's syringe. The first two have been described in detail by Dr. Brewer, but I am unable to agree with his method of using Jubé's syringe, and, I think, it is not the method suggested by the designer.

I have used this syringe (5 c.cm.) on many occasions during the past ten years for transfusion of undiluted blood direct from donor to recipient, and have found it satisfactory in all cases where the donor was of robust type with large veins. I use sterile liquid paraffin to flush out the syringe and fittings and have a second syringe in readiness if necessary. A pneumatic tourniquet is fixed to the arms of both persons, and after infiltration of a small area of skin with 1 per cent. novocain the largest-size cannula is inserted into the vein of the donor pointing against the flow of blood, and in the opposite direction in the recipient. No incision of the skin is made, as by doing so one loses the natural elastic grip which the skin exerts on a large needle (excepting those frequent cases in which the recipient's vein must be completely exposed, and for these I would recommend the citrate method). The syringe is filled with blood from the donor and the liquid paraffin ejected immediately before the fitting—on the recipient's side—is connected, to avoid any air embolus. The suction and plunging movements of the syringe must then be carried out as quickly as possible, when it will be found that 250 to 300 c.cm. of blood can be given within five or six minutes. The only difficulty I have encountered is clotting in the needle of the recipient, but this does not usually arise until about fifty syringefuls have been administered. This method is perhaps difficult to begin with, but, like most operations, technique improves with experience. In practised hands I believe it is one of the best methods at our disposal for the repeated administration of blood, and this can be taken from the same donor—a valuable consideration when one has not an organized team of donors to draw from.

For those who are only called on to carry out blood transfusion infrequently I would recommend Keynes's flask, using citrated blood, or a flask and a three-way 50-c.cm. syringe (specially made for the purpose). The disadvantages of the citrate method are: (1) It is not an infallible remedy against clotting. (2) Exposure to air destroys some of the blood platelets—a serious matter in purpuras and certain forms of anaemia. (3) There is greater risk of contamination. (4) Reactions appear to be more frequent after using citrated blood.

With regard to the typing of blood it is not necessary to use any stock grouping sera and it is not advisable (as Dr. Brewer points out) to depend on this test alone. The best practical results will be obtained by testing the serum of the recipient against the corpuscles of the donor, and it is also advisable to test the serum of the donor against the corpuscles of the recipient. By this method the presence of minor agglutinins in the respective sera can be detected and the possibility of subsequent reaction in the patient further eliminated.

We are all agreed on the value of blood transfusion, even though we may differ slightly on the indications. Out of four cases recently treated in hospital (diagnosed as secondary anaemia and debility) three had 20 per cent. haemoglobin and one had only 15 per cent. (Haldane's method). None of these patients received a transfusion, although it was indicated in all, owing to the failure to obtain donors. The patients themselves made a fair recovery, though this was naturally slow and prolonged. The point, however, I wish to stress in referring to these cases is that it is difficult to decide when a transfusion becomes "imperative," and it may be of interest to some readers to know that a patient with secondary anaemia, a haemoglobin of 15 per cent., and red cells 1,280,000 per c.mm. could even exist.

The fact that patients so seriously ill in a Poor Law hospital did not receive a blood transfusion elicits the question, Why? The answer is simple: Donors could not be procured. This is a matter which might receive attention from the Public Health Department. Pending the advent of an organized scheme I am afraid that such a valuable remedy as blood transfusion will continue to remain a privilege for the minority of our sick population, and, as a therapeutic measure, will still be conspicuous by its absence in the practice of Poor Law and other hospitals.—I am, etc.,

J. F. O'CONNOR, F.R.C.S.I.

Limerick County Hospital, Feb. 7.

## Continuous Intravenous Saline

SIR,—In the administration of continuous intravenous saline a leg rather than an arm is to be preferred as the site of introduction. Unfortunately immobilization of the limb in a rigid splint is frequently badly tolerated by restless patients. By the use of the method described the leg is sufficiently fixed but the patient is as comfortable as may be in virtue of the movement permitted.

The cannula is inserted into the saphenous vein at the ankle. The delivery tube is looped around the foot, being conveniently held by passing it through an interdigital cleft. The whole is maintained securely in position by elastoplast strapping around the foot and ankle. The cannula cannot now be dragged out of the vein. The leg from the knee to the toes is swathed in wool and loosely bandaged. By means of three loops of six-inch bandage the leg below the knee is suspended from a cradle so that it swings free of the bed; the patient is now able to flex and extend the knee and move the limb from side to side. Passive movements of greater amplitude than those possible for the unaided patient are also soothing. To prevent any excessive voluntary flexion a generous length of bandage connects the ankle to the bed rail.—I am, etc.,

Newcastle-on-Tyne, Feb. 2. GEOFFREY PEBERDY.

## Cancer and Vitamin A Deficiency: Geographical Distribution

SIR,—I have studied with great interest the reports and the maps of the geographical distribution of cancer compiled by Dr. Percy Stocks for the British Empire Cancer Campaign (*Journal*, December 11, 1937, p. 1181). I think the whole profession owes a great debt of gratitude to him. His maps show geographical differences which require explanation and variations in site incidence which are puzzling. Some of the North Wales counties have death rates for gastric cancer amongst the highest in the country, and they also have high death rates for tuberculosis and high maternal mortality rates. Is there any factor common to these three rates? I think all those who have studied the question in Anglesey will agree that the prevalent lack of a well-balanced diet is one, if not the main, cause of this state of affairs. In many homes the staple diet is tea and white bread and butter, fresh meat is only sparingly used, the milk consumption is small, and potatoes and some root vegetables are eaten. The most astonishing thing is the almost entire absence of fresh green vegetables and fresh fruit as articles of diet. Dr. Emrys Jones, the tuberculosis officer for Anglesey, giving evidence at the Ministry of Health Commission at Cardiff last week, is reported as stating that in his opinion most of the tuberculosis encountered was due to a lamentable neglect of the nutrition of children. He said that green vegetables were never used in some homes, "they were looked on just as green leaves." My own observations lead me to the conclusion that there is in Anglesey a well-marked deficiency of vitamin A in the diet, and that this is a vital factor in the production of these three high death rates. If this is so we should expect a high incidence of gastric carcinoma, as it has been shown by Roller and Wills that vitamin A is a vital necessity for the normal functioning of the gastro-intestinal tract, and that a deficiency causes degeneration of mucous membranes; it is clear from Dr. Stocks's reports and maps that while the rates for cancer of the tongue, larynx, tonsils, bladder, and prostate are low in North Wales compared with other areas, the gastric cancer rate is one of the highest in Great Britain. Dr. Stocks does not think this is a racial characteristic, but suggests that dietary conditions may have something to do with it. I am inclined to think that the vitamin A deficiency is a predisposing factor in gastric cancer, and that large quantities of hot tea, taken at very frequent intervals through the day, act as an irritative factor on a debilitated and degenerated mucous membrane.

The similarity between the geographical distribution of cancer and that of tuberculosis is interesting and may be significant, as shown in the work of Stocks and M. N. Karn on the distribution of cancer and tuberculosis in England and Wales. Pearl has demonstrated that there is an antagonism between acute tuberculosis and cancer, so that they hardly ever occur in the same individual. If this is so, why should these two diseases often have high death rates in the same areas? These and other considerations prompt me to make the following suggestions:

1. Dark-adaptation tests should be carried out on a large scale in areas with high death rates from cancer and tuberculosis to prove or disprove the coexistence of a vitamin A deficiency.

2. If these tests show there is such a deficiency, an intensive educational campaign should be conducted in these areas on diet and nutrition, with special reference to the consumption of more milk and dairy products and more green vegetables.

3. The revival of agriculture and market gardening will be necessary to meet these increased requirements.

4. Further dark-adaptation tests should be undertaken at intervals to see if the vitamin A deficiency is made good, and a close study of the rates and distribution of cancer and tuberculosis when the deficiency is lessened should also be made.

—I am, etc.,

Cemaes Bay, Anglesey, Feb. 8. J. L. MOIR.

## Insulin for Local Sepsis

SIR,—I have read with interest the letters of Dr. R. D. Lawrence (*Journal*, January 15, p. 143) and the late Dr. Otto Leyton (*Journal*, January 22, p. 203) commenting on my results of the local application of insulin. I am well aware that work on the effect of insulin in cutaneous ulceration has been reported abroad, and reference to this was made in my communication, but I have been unable to find any similar records in this country. With the statement that there is nothing to show why insulin should have a local effect I cannot agree. Cohen and Libman (*Quart. J. Med.*, April, 1937, p. 157) in experiments with injections of posterior pituitary extract and glucose show that there is a more marked and prolonged rise in the blood sugar than that following the ingestion of an equivalent amount of glucose alone, and conclude that the posterior pituitary extract antagonizes insulin hypoglycaemia by retarding the peripheral utilization of blood sugar. If, as this tends to show, there is carbohydrate metabolism in remote tissues, it supports the theory put forward in my memorandum that by reducing the sugar content of the area by local application a morbid condition might be relieved. Naturally much research with careful controls is essential before any new treatment can be considered of proven value, but I hope that the encouraging results which have so far attended this therapy will be maintained.—I am, etc.,

London, W.1, Feb. 4. NEVIL LEYTON.

## Two Unusual Cases

SIR,—The following two cases may be of interest, as they present somewhat unusual features.

CASE I

A nurse, aged 22, had been nursing a case of shingles for two or three weeks when a neuralgic pain began in the neck. Shingles appeared on December 7 and she came to me on December 9. She then had a massive infection of the right side of the neck, the whole area supplied by the third (or is it the fourth?) descending cervical nerve being involved. Fortunately the area was a small one, as it was impossible to put a threepenny-bit (old style) on it without overlapping a scar. On December 13 she came out in a typical chicken-pox eruption, distribution and character being absolutely according to the book. As she had a pock on her soft palate and another by the inner canthus of her left eye her discomfort was complete. The pain from the shingles was bad but not too severe. The last pock came off on December 30, but her shingles did not clear up till January 8, leaving her neck very badly scarred.

On December 7 the younger sister of the patient developed chicken-pox, which ran a perfectly normal course, but the family let me down; they none of them developed shingles. The younger girl's infection traced back to her sister's shingles, as a reference to the dates will show.

I suppose every practitioner of experience has seen cases of shingles following chicken-pox and the reverse, but this is my first experience, after thirty-five years of it, of the two occurring in the same patient at the same time. I have frequently noticed that these massive cases of shingles are not as painful as one would expect. Also I have used pituitrin for some time now and find that in most cases it acts like a charm, the only exceptions being three which had a chicken-pox complex. I wonder if this has been the experience of others.

CASE II

A married woman, aged 76, had a ruptured gall-bladder removed some four years ago. On her return from hospital she showed a definite Stokes-Adams syndrome: blood pressure 220/120, pulse rate 50. She was able to carry on her light duties about the house, take short walks, and altogether enjoy a fair measure of comfort. I was constantly in the house and her pulse never varied. In the beginning of November, 1937, she developed bronchitis, which slowly cleared up without causing undue trouble and without altering the cardiac condition, which remained typical. On December 8 I was sent for and found her sleepy and stupid; blood pressure was 300+/145 and pulse rate 32. As neither of my instruments will register more than this, and as her heart-beats were still coming through gaily, I cannot give her actual systolic pressure. The next day her blood pressure was down to its old figure (220/120), but her pulse continued at 32. On the morning of December 14 a scared night nurse looked in on her way home to say that she could not make the pulse more than 22 at the wrist. This I confirmed shortly after and proved it by the stethoscope over the jugular. We were getting it all at the wrist. The rate remained the same all day, my last visit being about 9 p.m. The next day it had risen to 28, and oscillated between 28 and 32 till the Friday. Her blood pressure did not vary from the 8th. On the Friday (December 17) she was unconscious; blood pressure was 155/95 and pulse rate 85. On Saturday she was quite conscious and placid but sleepy; blood pressure was 220/120 and pulse rate 50. On Sunday she was again unconscious, and by the Tuesday her blood pressure had dropped to 95/0 and her pulse rate risen to 145. She died that afternoon.

I have had a pulse rate of 32 before in a man whose pulse pressure was too high for my instrument, but I have never heard or read of a pulse rate of 22. The other interesting point seems to me to be the return to consciousness on December 18, coincident with the rise in blood pressure and drop in pulse rate.

—I am, etc.,

Clevedon, Somerset, Jan. 29. R. STUART RENTON, M.D.

## The Radiologist's Range of Service

SIR,—In your issue of February 5 Mr. H. Osmond Clarke says:

"All fractures require treatment, and the appropriate treatment for any individual fracture can be determined only by the experienced surgeon who has before him all the facts, clinical and radiological."

The statement is clear. It means that the general practitioner must never treat a fracture, except with the assistance and advice of a consulting surgeon. But do general practitioners in fact accept this doctrine—or are they likely to within any predictable future? If they do not, two courses are open to them: (1) To decide entirely on their own responsibility whether or not to call in a surgeon. (2) To talk over the matter with a radiologist in whom they have confidence, and thus to receive some help in reaching a decision.

Which of these courses is the better? I leave it to your readers to judge. I must, however, protest against any attempt on the part of one specialty to lay down rules as to what may or may not lie within the province of another specialty. Radiologists are determined that they themselves shall decide what work they may usefully undertake, what advice they may give. They are constantly striving to reach a standard of professional qualification such as shall not be exceeded by specialists in any other branch of medicine. Hence the institution of a higher diploma in radiology, with a physician, a surgeon, and a pathologist on the board of examiners.

If radiologists are wrong in these ideas—if the profession at large does not appreciate their efforts at acquiring a wide clinical training—then the attempt will fail, and the remnant that are left will become "hewers of wood and drawers of water" to those who have been wise enough to choose a real specialty.—I am, etc.,

London, W.1, Feb. 11. F. HERNAMAN-JOHNSON.

SIR,—Knowing as he does that broken bones contain only black ingratitude, I am sure that no radiologist wishes to be connected in any way with the *treatment* of fractures; he has so many worries of his own that he grasps with alacrity at any opportunity of disclaiming responsibility for the misfortunes and mistakes of others.

However, Mr. H. Osmond Clarke in his letter (*Journal*, February 5, p. 310) claims that the radiologist has not the wide experience to enable him to speak with authority on clinical end-results. I would like to point out that in fact a radiologist does see patients at all stages, and that he sees (assuming he is single-handed) at least as many films as the rest of his hospital staff put together, and, supposing that he has any intelligence at all, he gets a very good idea not only of the efficacy of various surgical performances but also of the judgment and ability of the surgical performers. He could quote the odds, for instance, fairly accurately against Mr. X. getting a Smith-Petersen pin of the correct length anywhere near the head of a femur, or against Dr. Y. getting any lipiodol into a chest at all.

I find that I am frequently asked not only to decide if "competent surgical advice" is indicated, but to choose and therefore be responsible for a nursing home, book a bed suitable to the patient's medical and financial condition, recommend, locate, and arrange with a surgeon, and possibly an anaesthetist, unless I can manage to fix the operation for 7 to 8 p.m., in which case the referring doctor could give the anaesthetic, and if this is possible perhaps I would leave a 'phone message at the "Dog and Duck" before 4.30 p.m., when he will be calling there. Incidentally everyone would be very much obliged if I

could ring up relatives four counties away (telephone number and exact name not known) to ask permission for the anaesthetic before doing anything else.

Lest Mr. Clarke should fear that I have hindered the flow of patients through what he would consider the proper channels, I would hasten to point out that on the slightest pretext I attempt to throw the burden on to the broad, competent, and obliging shoulders of my surgical colleagues—whatever happens I want my alibi watertight. In spite of my lack of special training, my judgment is extraordinarily good, because not once have I heard a surgeon complain that the condition was too trivial to benefit from his wide experience, or that I should have sent it back to be dealt with by the general practitioner; in fact I have always been given to understand that he was just the man for the job.—I am, etc.,

February 9. B.M./MC5W.

## A Word of Caution

SIR,—The Council of the Medical Defence Union is somewhat disturbed at the continuing volume of requests it receives for advice and assistance from practitioners who have entered into contracts with a body known as the Consolidated World Research Society Limited. On a previous occasion a report appeared in your columns (February 13, 1937, p. 337) as to certain action taken by our solicitors arising from representations made to a practitioner on completion of a contract with the above-mentioned society. Perhaps it would be useful to quote a few sentences from that report:

In December last the Consolidated World Research Society Limited instituted proceedings against a medical man practising in Sussex claiming the sum of £18 said to be due under a contract signed by this doctor for the supply of the *Consolidated Encyclopaedia*. The conduct of the defence was assumed by the Medical Defence Union, and a defence was filed repudiating liability on the ground that the defendant had been induced to enter into the contract "by fraud and wilful misrepresentation by the plaintiffs' representative." A few days before the date for the hearing notice was given on behalf of the plaintiff of the withdrawal of the claim.

Members of the Medical Defence Union are requested to communicate with its Secretary before entering into any contract with the Consolidated World Research Society, whilst, at the same time, it would be desirable to indicate the scope and character of the representations made by any representative employed by the above society when canvassing on its behalf.—I am, etc.,

ROBERT FORBES,
Secretary.

49, Bedford Square, W.C.1.

# Universities and Colleges

## UNIVERSITY OF CAMBRIDGE

A public lecture will be given in the Physiological Department on Monday, February 21, at 5 p.m., by Professor Simon Flexner, formerly director of the Rockefeller Institute for Medical Research. His subject is epidemic poliomyelitis and epidemic encephalitis.

During the month of January titles of the degrees of M.B., B.Chir. were conferred by diploma on A. C. Clark and V. E. A. Sykes (Newnham College), and of M.B. on G. E. Grove (Girton College).

The following candidates have been approved at the examination indicated:

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.—*Part I:* F. Bush, S. J. H. Douglas, Heather D. Dowling, T. Fichardt, Kathleen M. Henderson, T. H. Hills, F. B. Kiernander, O. C. Levine, K. Lumsden, R. L. Mansi, A. M. Mansour, J. Morton, R. S. Padaki, C. N. Pulvertaft, S. J. R. Reynolds, Alice M. Ross, A. Smerasuta, C. G. Talwalkar, S. El Din H. El Taoudi, W. E. McL. Topping, L. Werbeloff, M. A. A. Zohdy.

## UNIVERSITY OF LONDON

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL

The Sydney Ringer Memorial Lecture will be delivered by Professor J. H. Gaddum at University College Hospital Medical School, University Street, Gower Street, W.C., on Tuesday, March 8, at 5 p.m. His subject is "Ephedrine." The chair will be taken by Sir Henry Dale, F.R.S., and the lecture is open to all qualified practitioners and medical students.

*Amendment of Regulations*

Amended regulations for the Academic Postgraduate Diploma in Public Health (*Red Book*, 1937-8, pp. 649-52) have been approved for examinations in and after 1939. Copies may be obtained from the Academic Registrar, London University, Bloomsbury, W.C. Revised regulations for the External Diploma in Public Health have been approved, and will be published in the *Blue Book* in September.

*Appointment of Representatives*

Mr. John Fawcett, F.R.C.S., has been appointed governor of Alleyn's College, Dulwich, in the place of the late Sir Andrew Taylor, and Professor W. W. Jameson representative of the University at the Health Congress of the Royal Sanitary Institute at Portsmouth, July 11 to 16.

## UNIVERSITY OF DURHAM

At its meeting on February 11 the Senate conferred the title of Emeritus Professor on Professor H. J. Hutchens, M.R.C.S., L.R.C.P., D.P.H., on the occasion of his resignation from the Heath Professorship of Comparative Pathology.

## UNIVERSITY OF SHEFFIELD

At its meeting on February 11 the University Council received notification of payment by the Sheffield City Council of £11,998 as grant to the Faculties of Arts, Pure Science, Medicine, and Law for the year ending March 31.

A special degree congregation will be held on Monday, March 21, at 3 p.m.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND

A meeting of the Council was held on February 10, with the President, Sir Cuthbert Wallace, Bt., in the chair.

The Hallett Prize was presented to Bertram Alfred Edward Johns of Birmingham.

*Diplomas*

Diplomas of Fellowship were granted to Frederick Charles Durbin of St. Thomas's Hospital and Denis Frederic Elison Nash of St. Bartholomew's Hospital.

Diplomas of Membership were granted to the 159 candidates whose names were given in the report of the meeting of the Royal College of Physicians of London published in the *Journal* of February 5 at page 317; as were the names of the twelve candidates who have been granted Diplomas in Public Health, and the names of the four candidates who have been granted Diplomas in Tropical Medicine and Hygiene.

Diplomas in Medical Radiology were granted, jointly with the Royal College of Physicians, to D. M. Harper, T. Lodge, and J. T. McGinn.

It was reported that at the recent Primary Fellowship examinations held over-seas eleven candidates out of seventy-six were successful in India and five out of fifteen in Cairo.

Mr. Eardley Holland was reappointed to represent the College on the Central Midwives Board, and Mr. Sampson Handley and Mr. Graham Simpson were appointed to represent the College on the Committee on the Geographical Distribution of the Industrial Population.

*Museum Demonstrations*

A course of museum demonstrations in the theatre of the College begins on February 28, when Mr. L. W. Proger will show new specimens. Mr. Proger will repeat this demonstration on March 7 and 14. On March 4 Dr. A. J. E. Cave will speak on anatomy of the tongue, on March 11 on anatomy of the diaphragm, and on March 18 on anatomy of the skin. All the demonstrations commence at 5 p.m., and are open to advanced students and medical practitioners.

# Obituary

## SIR F. TRUBY KING, C.M.G., M.B.

Formerly Director of Child Welfare, Dominion of New Zealand

We regret to announce the death on February 9, at Wellington, New Zealand, of Sir Truby King, whose name and teaching are known all over the world through his books *The Expectant Mother*, and more especially *Feeding and Care of Baby*, which is the official handbook of the many Truby King and Mothercraft Training Societies.

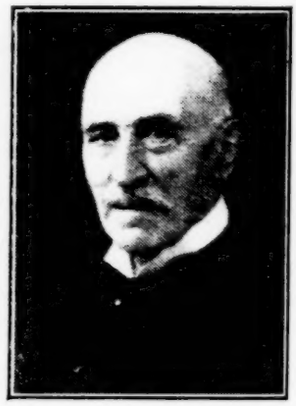
Frederic Truby King was born in 1858 at New Plymouth, New Zealand, the son of Thomas King, and studied for the medical profession at the University of Edinburgh, where he graduated M.B. and was awarded the Ettles Scholarship. Before deciding to make medicine his career he had worked with growing reluctance as a bank clerk in New Zealand. After graduation he spent two further years at Edinburgh, studying preventive medicine, and was one of the first to take the degree of B.Sc. in Public Health. He then held resident posts at the Edinburgh and Glasgow Royal Infirmaries, and returned to New Zealand in 1888, becoming superintendent at Seacliffe Mental Hospital and lecturer on mental diseases in Otago University. In 1907 he founded the Royal New Zealand Society for the Health of Women and Children, which was later named the Plunket Society because of the interest taken in the movement by the Governor, Lord Plunket, and his wife. For thirty years the society and its nurses have followed Truby King's teaching as closely as possible and have spread his doctrines far and wide. Between 1907 and 1928 the infant mortality of the Dominion was halved, and there was a notable improvement in the health of mothers before and after childbirth. In 1913 Truby King visited this country as delegate from New Zealand to child welfare conferences in London, and in 1917 he accepted an invitation to organize work here on corresponding lines; thus was established the mothercraft training centre in Trebovir Road, Earl's Court, and similar centres have arisen in every English-speaking country as well as in other parts of the world, their common aim being to practise and teach the principles laid down by the founder. In 1919 he toured Australia with a view to establishing welfare centres there, and he paid three more visits to England. Now nearly 800 nurses hold the certificate of the Mothercraft Training Society at Highgate, and there are six branches in London and the provinces. From 1921 to 1927 Truby King was Director of Child Welfare in the Department of Health of the Dominion of New Zealand. He had been created C.M.G. in 1917 in recognition of his pioneer work in infant welfare, and received a knighthood in 1925. The American Pediatric Society made him an honorary member.

Sir Truby King had been a member of the Wellington Division of the British Medical Association for more than thirty years. An excellent account of his methods of infant feeding and management will be found in Dr. Reginald Jewesbury's *Mothercraft, Antenatal and Postnatal* (1932), of which a new edition has lately appeared. Public tributes to his fruitful enthusiasm for infant welfare have been paid by the Prime Minister of New Zealand, Mr. Savage; and the Dominion Government has accorded him a State funeral.

## SIR JOSIAH COURT, J.P., M.R.C.S.

Sir Josiah Court, who died on February 8 at Staveley, Chesterfield, aged 97, was a general practitioner in a colliery area, who, in the face of strenuous and not always agreeable opposition, established the position of miners' nystagmus as due mainly to the lighting of the mines and not to the posture of the men while at work. He had long been the senior member of the British Medical Association in Derbyshire, having joined the Chesterfield Division more than sixty years ago. At the Annual Meeting of the Association at Newcastle-upon-Tyne in 1921 he was vice-president of the Section of Preventive Medicine with Industrial Diseases.

Josiah Court was born on January 17, 1841. He qualified to practise with the M.R.C.S.Eng. in 1863; two years later he became L.R.C.P.Lond., and after acting as assistant medical officer at Guy's settled in practice. In time he became a leading practitioner at Staveley, and filled many official posts there. Over his many years of busy life he was consulting surgeon to the Derbyshire Miners' Union for claims under the Workmen's Compensation Act, surgeon to the Great Central Railway at Staveley, certifying factory surgeon, public vaccinator, and medical officer of health. As surgeon to the local miners' association he gained first-hand acquaintanceship with the diseases incidental to that occupation, and became well known at home and abroad for his study of miners' nystagmus.



As long ago as 1832 miners were known to have trouble with their eyes and heads which in time disabled them from working in a mine. It was more fully recognized and described by a Sheffield doctor in 1854. The first case recorded in literature occurred in Belgium. The eye muscles were described as being overburdened from continued effort in a deficient light. Thenceforward the disease received much more notice by mine doctors, and the awkward position assumed by the miner hewing at the coal face was looked upon as contributing to its cause. Many observers have written about nystagmus since then, additional symptoms have been described and varying causes assigned to it.

Dr. Court came into the records and discussion of the disease in 1891 and subsequently by writing several papers on it. A lengthy report was then prepared by him for the Derbyshire Miners' Association, and in 1920 his papers on miners' diseases were collected and published by the *Sheffield Daily Telegraph*. By careful observations he showed that nystagmus was common in fiery mines where the safety-lamps must be carried but rare in mines where there was no gas and in which naked lights were used. He found that out of 573 miners using naked

lights only three were affected with nystagmus, and these had always used candles. In strong contrast to this, out of 524 men using safety-lamps 164 were affected. There was not a single case in torch-lamp pits among those men who had always used torch-lamps. He therefore looked upon the cause of the trouble as being essentially the insufficient light of a safety-lamp, which threw shadows and tried the eyes severely. When the light was improved, as by the use of a candle, the disease became rarer, and in the light of a torch-lamp giving two and a quarter times that of a candle (which he held was the best light of all) there was no disease. The difficulties in getting good light at a coal face, the black surface of which does not reflect rays but absorbs so very many of them, may be seen from the following observations. The average illumination at the coal face in safety-lamp pits was 0.018 of a foot-candle, in candle pits 0.09; while the smallest illumination which would enable a seamstress to work with black velvet, which absorbs about 97 per cent. of all incidental light, without experiencing discomfort was very much greater. Court took part in a discussion on the subject at the B.M.A. Annual Meeting at Nottingham in 1892, and his important contribution to this appeared in the *British Medical Journal* with those of other observers. In the better-lighted mines of recent years the trouble is not so often met with, but it is still a frequent cause of claims made under the Workmen's Compensation Act.

Court was naturally interested in the threatened invasion of our coal mines with the *Ankylostoma duodenale* of warmer climates. A grave outbreak of this occurred in the chief tin mine of Cornwall at Dolcoath, which was investigated by Haldane and Boycott in 1903. The hookworm also appeared in some Scottish pits. Court wrote a paper in the *World's Work* of the same year on "A New Form of Disease amongst Miners." This gave some account of the distribution of the disease, its main symptoms and the best methods to adopt in its prevention.

H. W. P. sends the following note:

By the death of Sir Josiah Court the Association loses one of its most distinguished general practitioners, and the members of the Derbyshire Branch their oldest and most venerated colleague. Josiah Court was born at Warwick the son of a chemist but of yeoman farmer stock. Through his grandfather, of Charlecote, near Stratford-on-Avon, he could trace descent from Richard Courte, a contemporary of Shakespeare's father. Indeed, the records of the town of Stratford show how the Courtes and the Shakespeares in the time of Elizabeth were associated as aldermen of that borough. Educated at King Henry VIII School at Warwick, Court, at the age of 14 years, entered the offices of a shipping firm in Liverpool, where he stayed for three years. Here he met and began a lifelong friendship with another boy clerk, who subsequently became Sir John Brunner, the founder of the famous chemical firm of Brunner, Mond and Co. At the age of 17 Court decided to enter the medical profession, and was sent to the Sydenham College of Medicine, Birmingham, associated with the old General Hospital, both long since demolished. At the hospital he held the position of resident medical assistant and afterwards moved to Guy's, where he completed his curriculum and qualified.

In 1864, a young man of 24, he bought a practice at Staveley in Derbyshire, and there he was destined to stay for seventy-three years. In his early days there Staveley was a place of green fields and woodlands, and Court led the life of an ordinary general practitioner of the period. Travelling on horseback or in an old-fashioned gig he covered many miles a day, and his work was general enough for the most general of general practitioners. Medicine, midwifery, and surgery, minor and major, occupied his time. It was before the days of Listerism. Nurses were scarce or unavailable and ambulance and hospital facilities inadequate. Such major operations as amputations and trephines were done in cottages, on kitchen tables, and, as Court used to say, the results were quite good. For over fifty years he gave ungrudging and devoted service to the community. No one was too humble or too poor to claim his help and ready sympathy; no trouble among his people too small to secure his interest and assistance. His humour, his common sense, his outspokenness and sincerity, his hatred of sham and pretence endeared him to all. The great assemblage at his funeral at Staveley was only a slight token of the position he held in the hearts of all, from the Lord-Lieutenant of the county to the humblest worker in the pit. His interests were many and varied. Birds, dogs, and children had his special affection, and his recreations were fishing and shooting. He was a crack rifle-shot, and in 1880 won the Robin Hood Cup at Wimbledon with seven bulls out of seven shots at 200 yards. In 1874 he was mainly responsible for the formation of the Staveley Rifle Volunteer Company and was gazetted captain. In politics he was a strong Conservative, though his independent spirit never allowed him to submit to dictation from party wire-pullers. He was chairman of the local Conservative Association in 1868, and in subsequent years. On six occasions he contested the North-East Derbyshire Parliamentary seat without success; Liberalism at first, and then Labour, in the constituency were too strong for him. Yet in 1895 he reduced a majority of 2,170 to 527, and in 1900 to 268. This, under the circumstances, was a triumph; as the miners said at the time, "Nobbut t'owd Doctor could 'a' done it." A strong and sincere Churchman, his private benefactions to Church and people were many. During his ninety-first year he walked to church on fifty-two successive Sundays. Up till the same great age, too, he was to be seen week after week attending the open-air services of the Salvation Army in the main street of Staveley. In 1901 he was made a Justice of the Peace for Derbyshire, and in 1920 received the honour of knighthood.

In the medical profession he will be chiefly remembered for his researches into the causes of miners' nystagmus. Among the offices he held was that of consulting surgeon to the Derbyshire Miners' Association, and at the request of that body he undertook the task of inquiring into the question of nystagmus. In the course of his investigations in 1890-1 Court descended numerous pits in Derbyshire, Durham, and the Forest of Dean, and also, abroad, in Belgium, and personally watched the miners at work under varied conditions of lighting, etc. His inquiries covered the cases of no less than 1,400 miners, working with safety-lamps and naked lights. In May, 1891, he unequivocally reported to the Miners' Association that in his opinion the cause of the condition was the defective lighting in the pits. He had received some help in the inquiry from a Dr. Pegler of Stonebroom, Alfreton. It is difficult for us to-day to realize the bitterness of the controversy which arose. The writer, at that time house-surgeon to a famous ophthalmologist, Priestley Smith, well remembers the disturbance which followed. Professional opinion as expressed by Simeon Snell of Sheffield was that "the chief cause is not the safety-lamp, but the position in which the men work." In July, 1892, Court read a paper at the B.M.A. meeting in Nottingham. He

was supported by Tatham Thompson of Cardiff, but all the other ophthalmic specialists present were opposed to him. It is on record that so violent was the controversy that after the meeting one well-known ophthalmologist declined to travel home in the same compartment as Court. In strong opposition, too, were the mine inspectors, who feared the adverse effects of Court's suggestions on the introduction of safety-lamps into "gassy" pits, and the owners, who were apprehensive of the expense entailed by a more efficient method of lighting. But Court went on with his work, and gradually professional opinion veered round in his favour. In February, 1922, J. S. Haldane and Llewellyn read a paper before the Royal Society endorsing Court's views, and in the following July he finally triumphed, when, at the Ophthalmological Congress at Oxford, after he had read his paper, it was resolved: "That the character of the illumination is the chief factor in the production of coal miners' nystagmus." The importance to the mining industry of his research can hardly be overestimated. No longer can it be held that miners' nystagmus is an inevitable corollary of the industry, but, on the contrary, it is clear that, given proper precautions, it is almost entirely preventable.

[The photograph reproduced is by Russell, London.]

## A. E. HODDER, D.S.O., M.A., M.B.

Dr. Andrew Edward Hodder died at his home in Stafford on February 3, aged 62. A native of Dulwich, he was educated at Bedford School, from which he proceeded to King's College, Cambridge, gaining the Vintner Exhibition and graduating in Arts in 1898, with second-class honours in Natural Science, and in Medicine in 1901. After qualifying he held the appointment of house-surgeon at his old hospital, St. Mary's, Paddington, and later practised for several years in Lancashire. He settled in Stafford in 1911, and was appointed to the Staffordshire Insurance Committee as a representative of the Minister of Health in 1913, in the same year being made a member of the Panel Committee. He later served as chairman of the Insurance Committee for several years, and in 1927 succeeded the late Dr. Ridley Bailey as chairman and honorary treasurer of the Staffordshire Panel Committee, holding these offices, together with that of chairman of the Medical Benefit Subcommittee, at the time of his death.

Dr. Hodder from his earliest days took an active interest in the service of his country and joined the school Cadet Corps, the Volunteers, and the Territorial Army. Proceeding to France as captain in 1915 with the Third North Midland Field Ambulance, his brilliant work in the field gained him rapid promotion, and in 1917 he was given command of the Ambulance, with the rank of lieutenant-colonel, and was awarded the D.S.O. On his return to Stafford after the war Dr. Hodder continued his public activities. He was a Governor and for some years chairman of King Edward VI Grammar School, a Governor of the Girls' High School, and for a period a member of the Town Council, doing valuable work on the Health Committee. He was also chairman of the Stafford Branch of the English Association, a member of the Staffordshire Nursing Association, and a vice-president of the Stafford Cripples' Centre. He took an active part in the modern development of orthopaedics. Dr. Hodder was an active and staunch member of the British Medical Association for thirty-three years and secretary of the Walsall and Lichfield Division in 1922, a member and past-president of the North Staffordshire Medical Society, and a foundation member of the Mid-Staffordshire Medical Society, of which he was elected president last October. For many years he was also a member of the honorary staff of the General Infirmary, Stafford, first as anaesthetist and later as physician. He leaves a widow and four children.

Even a mere catalogue of a man's activities may give some indication of his character. Hodder, by culture, temperament, and experience, made an ideal chairman. He held the balance of debate with an even poise and had the gift of seeing the other man's point of view; but amidst his various interests one stood out above all others—his efficiency in his daily job. He had a high sense of the dignity of general practice, and while he made full use of the modern methods of diagnosis he regarded the clinical acumen of the family doctor as the final arbiter. He took an active part in preventive medicine, and on more than one occasion acted as liaison officer between the Public Health Service and other branches of medicine.

Hodder had a high code of ethics. He had few dislikes, but to him all forms of pedantry and ostentation were taboo. His services on the Insurance Committee were particularly valued; for while he took every reasonable care to safeguard the interests of the profession, his impartiality and experience were recognized by those representing other interests, and, as the clerk of that committee has expressed it, "He could make the intricacies and difficulties of medical practice plain to all." When all has been said and written concerning Hodder's qualities and achievements, those who knew him best will also cherish the memory of a loyal friend.

Dr. Frank Bryan writes from Tavistock:

His indeed was a sterling character. He came up to King's, Cambridge, about a year older than most of his intimate friends, and, because of this and the solid worth of his common sense and keen sensibility, he greatly endeared himself with a happy fraternity in which were representatives graduating for the Services and all the various professions. His loyalty and steadfastness to those early friendships was continued to the end, and even in the trying days of the great war he found time to keep in touch with some of us away on other fronts and some at home. Not only was he the centre round which friendship for himself revolved, but through him in large part was maintained the friendship of many other of his contemporaries one with another. So much was this the case that he was affectionately known to us all as "Pa Hodder." We all valued his opinion, and he never failed to be anything but absolutely conscientious with his advice to us, just as I am sure he ever was with his patients.

Dr. R. Stirling sends the following tribute to the late Dr. C. PARKER STEWART: The character of the man is my concern. Let it suffice to say that he obtained first-class honours at Edinburgh University in many subjects and also B.Sc. in Public Health. He finally selected public health as a career. His abilities and dexterous fingers early qualified him for any branch of medicine or surgery he chose to adopt. He certainly was a man of more than average ability, full of resource and energy. After a few years of hospital life and in general private practice he gained a clinical knowledge which later proved invaluable in his work as medical officer of health. His interests were too varied to allow him to drift into a narrow groove, and he never became purely an administrator. He brought to bear human sympathetic understanding in all he did. In no department did he show his originality and success more than in the creation of the Perth child welfare centre, which will remain a model worthy of imitation for many years and a lasting tribute to his memory. My thoughts are still lingering with the

echoes of Stevenson's "Christmas Sermon." I have associated much of it with my old friend Stewart—he is a war-worn veteran who laid down his arms without dishonour, yet hardly had the barrack gates clanged behind him than his strength failed. His steps faltered literally on the day of his release from service. His joy of life might have afforded him a lot of happiness, but if the pleasures of leisure have been denied him its pains have not been experienced. As a loyal friend and as a trusted and loved doctor he will be greatly missed both in public and private life.

Dr. PERCY COLEMAN, who died at Clacton-on-Sea on February 4, studied medicine at St. Thomas's Hospital and at Newcastle-on-Tyne, qualifying M.R.C.S., L.R.C.P. in 1890 and taking the M.B., B.S. of Durham University in 1892. Before settling in practice at Clacton he was house-physician at the Middlesex Hospital and house-surgeon at the Colchester Hospital. In 1899 Dr. Coleman joined the staff of the newly built Clacton and District Hospital, and was for many years chairman of its board of management; in 1929 he was presented with his portrait in oils, with an album containing the names of 335 subscribers and a wallet containing the residue of the testimonial fund. Dr. Coleman was also for many years medical officer to the Middlesex Hospital convalescent home at Clacton and to the Essex and East Counties Asylum convalescent homes. He had been a member of the British Medical Association for forty-four years, and was chairman of the North-East Essex Division in 1924–5.

## A HOSPITAL CLEARING HOUSE

A scheme to centralize the arrangements in London for the admission to hospitals of emergency and acute cases is on the point of completion. The co-operation of the hospitals likely to be affected has been secured, and King Edward's Hospital Fund has promised a substantial donation towards the cost. The task of bringing the proposal into practical shape has been that of a sub-committee of the Voluntary Hospitals Committee of the County of London, which is the body set up under the Local Government Act, 1929, for consultative purposes with the local authority regarding hospital provision. It is proposed to set up a central office where a record of beds available at voluntary hospitals will be maintained, and practitioners who desire cases admitted will be encouraged to refer by telephone to that office instead of directly to the hospitals. Practitioners will not, of course, be precluded from making direct application to a particular hospital, and the choice of hospital will be left, as at present, to them; but it is felt that a centralized system will avoid frequent delay and disappointment by discovering at once where beds are available and where they are not, and will also save the time of hospital officers. One necessary step will be to have the admission of cases controlled by only one office in each hospital, so that the clearing house will not have to make inquiries from different sections in turn when applying for a bed. This arrangement, simple as it seems, is said to necessitate quite a considerable amount of reorganization in some cases.

### Extensions and Improvements

The latest report of the Voluntary Hospitals Committee, although not concerned with hospital finance, does not seem to reflect the rather dreary picture of the future of voluntary hospitals which has been painted in the correspondence columns of some newspapers. The voluntary hospitals within the county of London number 105, with 16,113 beds, an increase of nearly 1,000 beds upon the figure for 1931. Westminster is erecting a new and enlarged hospital at some distance from its old building; Great Ormond Street is rebuilding on its present site; St. Bartholomew's is reconstructing section by section behind its existing façade; and the rebuilding of St. George's will be undertaken shortly. Extensive programmes, including the provision of pay-beds for middle-class patients, are in hand or have recently been completed at eight other general hospitals, five more are building new out-patient departments, and much other reconstruction and enlargement is proceeding. All these proposals as they come along are referred by the committee to the London County Council for its observations. One instance of such consultation is mentioned in the case of the London Fever Hospital, which is building an isolation block. The authorities of that hospital approached the committee and asked whether, in view of the provision made by local authorities for fevers, it was considered that the hospital fulfilled a useful purpose within the voluntary system. The question was gone into carefully with the London County Council, which took the view that the services rendered by the London Fever Hospital should be regarded as complementary to its own. The conclusion has been arrived at that the hospital does serve a useful function, and the erection of the isolation block is accordingly proceeding. The hospital programme of the London County Council is also continually expanding. In its general hospitals it has 17,534 beds, and in its special (including fever) hospitals it has 14,136, but extensions are in progress which will increase the total by a further 1,834. The more important of these extensions are at Lambeth, Mile End, Paddington, and St. Nicholas (Woolwich) general hospitals, and the North-Eastern Fever Hospital. A scheme is also in preparation for a new general hospital of 500 beds on part of the site of St. Benedict's, Wandsworth.

### A New Contributory Scheme

A matter which has received the attention of the committee is the inadequacy of payments frequently made by provincial contributory schemes to London hospitals treating their patients. Some schemes were found to be paying only 3s. per in-patient day, or even less. As a result of representations a great improvement has lately taken place. It is stated that a contributory scheme is likely to be launched early in 1938 with a basis of contribution of 6d. a week, and income limits of £5 a week for single persons, £7 for married couples, and £8 for married couples with dependants. The corresponding income limits recommended by the British Medical Association, subject to economic and local variation and periodical revision, are £4, £5, and £6. The scheme is put forward by the Advisory Hospital Committee of the Hospital Saving Association. The Voluntary Hospitals Committee has been considering hospital insurance for the middle classes, or at least for persons of moderate means but above the usual income limits, and has had some discussions with the British Provident Association, but the proposed raising of the Hospital Saving Association limits brings a new factor into the situation.

The Voluntary Hospitals Committee at present represents only the voluntary hospitals within the county, but it is proposed to extend its constituency to an area corresponding to that of the King's Fund. The extension to a radius of eleven miles from St. Paul's will bring in forty-two additional hospitals with nearly 3,000 beds. London for hospital as for other purposes can no longer be considered as confined within the county boundary.

A new periodical dealing with research in rheumatism with the title *Zeitschrift für Rheumaforschung* will be published this year in Germany by Theodor Steinkopff of Dresden. It will deal particularly with the medical and sociological aspects of this disease, and is intended to help in the campaign against rheumatism by bringing together information derived from various sources. It will be edited by Dr. P. Köhler of Bad Elster, Professor R. Jürgens and Dr. H. Kaether of Berlin.

# Medico-Legal

## EFFECT OF A DELUSION ON A WILL

Not every testator of doubtful sanity is incapable of making a valid will. The classical instance of this principle is *Cartwright v. Cartwright* (1793), in which a chronic mental patient made a sensible will which was held to be valid, although her conduct immediately before and after was disordered and violent. The question before the court is not whether the testator was mad but whether his will was affected by his mental disorder. A frequent, because obvious, form of mental disorder rendering a will invalid is a definite delusion. Until the case of *Bohrmann* (1938) the court had never pronounced one clause in a will invalid for this reason and granted probate of the rest. In that case, however, Mr. Justice Langton found that a clause in one codicil was vitiated by an insane delusion but the rest of the will was not.

An elderly bachelor left an estate worth £180,000. He had made a will in 1926 in which he left small legacies to some of his relatives and the bulk to charities in England. He afterwards executed four codicils, in the last of which, made in 1932, he directed that the clause of the will by which he gave his money to charities should be "read and construed as if the word England were deleted therefrom and the words United States of America were substituted for the word England."

The relatives contested the will and codicils, alleging that the testator when he made them was suffering from insane delusions and obsessions, and was so devoid of ordinary human instincts as not to recognize the claims of family sentiment. The evidence showed that, as the learned judge put it, he was a man of very few friendships; he gave very little in life and got very little out of it. He was not a kindly or an affectionate man, and on smallest provocation he gave way to fits of ungovernable rage. He was a chronic asthmatic and a hypochondriac. In short, he was a most eccentric, very unreasonable, very spoilt, and rather useless human being. From medical evidence it appeared that in 1933 he ought to have been under some form of supervision. Dr. R. D. Gillespie, whom the judge complimented very highly both on his knowledge of psychiatry and on his ability and impartiality as a witness, noted that many of the testator's collateral relatives had been schizophrenes and suffered from paranoia. The testator was a paranoid psychopath, a person who was likely to entertain a definite delusion on one point and to have a clear intelligence on others, and who was deficient in human affections and the common instincts of mankind. The judge had to apply to this evidence the test formulated by Sir Alexander Cockburn, Chief Justice, in *Banks v. Goodfellow*.

> "If the human instincts and affections, or the moral sense, become perverted by mental disease: if insane suspicion or aversion take the place of natural affection: if reason and judgment are lost and the mind becomes a prey to insane delusions calculated to interfere with and disturb its functions, and to lead to a testamentary disposition due only to their baneful influence—in such a case it is obvious that the condition of the testamentary power fails, and that a will made under such circumstances ought not to stand."

The law, said Mr. Justice Langton, has not recognized any half-way house between sanity and delusional insanity. One is treading upon dangerous ground if one goes a step further and says that a person who lacks to a certain degree the human instincts is therefore incapable of making a will. Such a step, he considered, could only be taken by legislation. He therefore could not find that this testator was incapable of making a good will. He was particularly impressed by one action of the testator in making a present of £400 to a needy relative and suggesting that if the relative desired to pay interest he should pay it into the bank for the benefit of his children. The testator had also carried out instructions, which had no legal force, in the wills of his brother and his mother to leave two sums of a thousand pounds each to two cousins. The judge therefore could not believe that the testator was incapable of the human instincts of affection and consideration for relatives, and held that although the testator was a paranoid psychopath he had none the less made a valid will and three valid codicils.

### A Delusion of Persecution

The fourth codicil, however, was a different matter altogether. The London County Council, desiring to enlarge a hospital, gave the testator notice that they would expropriate his home on Denmark Hill. Although they treated him with great consideration and twice extended the time within which he should have left the premises, he convinced himself that they were persecuting him because one of their valuers had a private grudge against him. He characterized them on many occasions in ridiculous terms, and even wrote a doggerel poem cursing them. The judge was quite satisfied that the testator had harboured an insane delusion against the Council. From the beginning of 1932 he had thrown his whole energies into a battle with them which was the overmastering motive of his life till he died. His fourth codicil, in which he deflected his bounty from English to American charities, was an expression of his hatred for the Council. His lordship therefore considered it right and proper to treat this particular clause as affected by the testator's delusion and to delete it, while allowing probate of the will, the first three codicils, and the rest of the fourth codicil. He admitted that he knew of no previous case in which a judge, on the ground of delusion, had disturbed a part of a will and left the rest. He could not, however, see that his decision conflicted with established law: the court frequently deleted from wills matter which they were satisfied had never been brought to the knowledge and approval of the testator. The learned judge felt that he was only applying the same principles when he deleted matter which he believed to have been tainted by delusion.

## LIABILITY OF A JEWELLER

The standard of care required of a person who does any kind of surgical operation depends upon the profession which he makes to the public. If he says he is a specialist the standard is very high. If he does not claim to be qualified at all it is fairly low. Mr. Justice Goddard had recently[1] to determine what standard of care and skill is required of a jeweller who pierces a client's ears for earrings. A lady asked the jewellery department of a large store to arrange to have her ears pierced. They employed a man who was used to the operation; he sponged the ears with an antiseptic, dipped his fingers into it, and pierced her ears with an instrument which he had brought with him and which he first held in a flame. She had chosen the particular day on which this was done because she was to go into a nursing home on the following day for a severe operation, and considered that her convalescence would give her a good opportunity of healing her ears before the earrings were fitted. For this purpose she had to wear "sleeper" rings, which are rather unsightly. She had her operation, and about ten days after the piercing she developed an abscess of the lymph glands in the neighbourhood of the left ear, for which she had to undergo an incision. She sued the firm, alleging that the employee had been negligent and had not taken reasonable precautions against infection. The learned judge said in his judgment that the jeweller could not be expected to use the degree of care which a doctor should use. The firm would be liable if he had used a wholly unsuitable or dirty instrument. The degree of cleanliness must be one reasonable for a jeweller—not for a surgeon. He saw no grounds for holding that the jeweller had departed from the standard of care appropriate to his profession, nor could he find that the abscess was due to any action of the jeweller's. He thought it much more likely that the infection took place after the piercing. He therefore dismissed the action, but said

[1] *Times*, January 29: Phillips *v.* Wm. Whiteley, Ltd.

that if there was a successful appeal he thought the general damages should be £200 and the special £72 10s. Every surgeon knows how easily infection can track up a metal wire which pierces the tissues, and a major operation may well lower the general resistance to infection. The learned judge's finding seems by far the most likely explanation of the mishap.

# Medical Notes in Parliament

The Divorce and Nullity of Marriage (Scotland) Bill was down for consideration in the House of Lords this week.

The business of the House of Commons included the second reading of the Housing (Financial Provisions) Bill and the National Health Insurance (Amendment) Bill, as well as later stages of the Blind Persons Bill and the Population Bill.

The report of the inquiry into the recent outbreak of typhoid fever at Croydon was issued to M.P.s on February 14 (see p. 404). No immediate request was made for a debate on it.

On February 15 there was issued a report by the Departmental Committee on questions arising out of the Workmen's Compensation Acts, making recommendations on the certification of miners' nystagmus, on the appointment and powers of medical referees, and on kindred matters. Appointment of medical appeal tribunals is recommended.

## Progress of Slum Clearance

In the House of Commons on February 15 Sir KINGSLEY WOOD moved the second reading of the Housing (Financial Provisions) Bill, which, he said, provided for the furtherance of the work of slum clearance and of dealing with overcrowding. Special provision was also made for agricultural housing, and the exceptional conditions prevailing in small urban areas would also be met. The slum clearance programme covered about 400,000 houses. Some 800,000 persons had passed from slums to new and good housing conditions, and others would be dealt with at the rate, on an average, of 25,000 a month. It was estimated that for the execution of the present programme of slum clearance and for dealing with overcrowding on the present standard some 600,000 new houses were required—400,000 for slum clearance and 200,000 for the abatement of overcrowding. About 200,000 houses had been built to date towards that total, and another 70,000 houses were under construction, while houses were being completed at the rate of about 7,000 a month.

Under the Bill, houses completed not later than December 31, 1938, would rank for subsidies fixed by the Acts of 1930 and 1935. Those finished after that date would rank for subsidies fixed by the present Bill. It was provided that a further review of the position should be made after December 31, 1941. Two important changes were contained in the new financial provisions. The first was the fixing of the two subsidies for slum clearance and overcrowding at the same level, and the second was that there would be an annual contribution for each house built over a period of forty years. The uniform subsidy, so far as slum clearance was concerned, would allow local authorities to let houses at practically the same rents as were contemplated when the slum clearance subsidy was fixed in 1930. With regard to rural housing, the Government proposed to introduce legislation at an early date to extend for four years the Housing (Rural Workers) Act, which would expire in June.

A motion for the rejection of the Bill, moved by Mr. Greenwood, was defeated, and the Bill read the second time.

Mr. ELLIOT, replying to Mr. Henderson Stewart and Mr. Westwood on February 15, said he intended to submit to Parliament a draft order designed to continue the existing rates of subsidy under the Housing (Scotland) Acts of 1930 and 1935.

## Medical Aid in China

On February 14 Mr. EDEN informed Mr. Mathers that an English-speaking group appointed under the League of Nations' plan of anti-epidemic assistance to China had been constituted under the leadership of Dr. R. C. Robertson and was already in China.

## Pasteurized Milk: Reports of Milk Nutrition Committee

Mr. W. S. MORRISON, replying to Captain A. Evans on February 14, said that the Milk Nutrition Committee had published a report dealing with experiments on rats at the National Institute for Research in Dairying, Reading, and at the Rowett Institute, Aberdeen. Two further reports, dealing respectively with the work at these two institutions on the feeding of calves on raw and pasteurized milk, and with an investigation into the effect of dietary supplements of raw and pasteurized milk on the growth and health of school children, were in preparation and would be published shortly. The committee proposed to issue thereafter a final report dealing with their inquiries as a whole.

*Derating of Hospitals.*—Sir COOPER RAWSON asked, on February 10, whether the Government would introduce legislation to effect the derating of hospitals in view of the heavy burdens consequent on rebuilding and reassessment. Sir KINGSLEY WOOD regretted it was not possible to do this. Proposals of this kind had been considered on many occasions and strong objections to their adoption had been found.

*Silicosis Scheme: Claim by Sheffield Widow.*—Mr. A. V. ALEXANDER asked on February 10 that the Home Secretary should further consider the claim of a Sheffield widow, under the Silicosis Scheme, in respect of the death of her husband. He said her claim had been rejected in spite of the fact that this man had previously been awarded compensation for silicosis at the full rate for a period of five years upon a certificate of total disablement due to this disease, and that, after a post-mortem examination, the coroner certified that death was primarily due to silicosis. Sir SAMUEL HOARE said there were two examinations in this case, and that the final authority, the Silicosis Medical Board, came to the decision, after a post-mortem examination, that death was caused by independent conditions and not by silicosis. The Board had unique experience in diagnosis of silicosis, and its decision was authoritative. The Board had always been regarded as a final authority and he did not see what other authority one could have. Mr. ALEXANDER said there should be a right of appeal from the decision of the Board, and Mr. JAMES GRIFFITH remarked that the Medical Board was compelled to find silicosis as the primary cause of death, although in many cases it was a subsidiary one. Sir SAMUEL HOARE promised to look into the points raised, though he had no reason to believe that the Board was not an effective tribunal.

*Medical History of ex-Service Men.*—On February 14 Mr. ORR-EWING asked the Minister of Pensions whether in future the full medical history of an ex-Service man while in any of the Services could be supplied to his medical adviser if such a man made a written request to this effect. Mr. H. RAMSBOTHAM replied that the Service records were confidential. He could not, therefore, adopt the suggestion. It was, however, the practice of the Ministry to welcome any reasoned statement in support of the claim from the man's own medical adviser, and to give him an opportunity to discuss the case with a medical officer of the Ministry in his area.

### *Notes in Brief*

The report of the Committee on Miners' Nystagmus has been presented to Parliament. Sir Samuel Hoare stated on February 3 that it would be issued shortly.

No special investigation has been made or is contemplated by the Ministry of Health into the nutritive value of margarine that has or has not been vitaminized. The Advisory Committee on Nutrition has recommended that where margarine is used it should be vitaminized. This recommendation has been conveyed to local authorities.

No. 5

# INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended February 5, 1938.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

*Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for*: (a) The 125 great towns (i) in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns (ii) in Eire. (e) The 10 principal towns (iii) in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

| Disease | 1938 | | | | | 1937 (Corresponding Week) | | | | | 1928-36 (Median Value Corresponding Weeks) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (a) | (b) | (c) | (d) | (e) | (a) | (b) | (c) | (d) | (e) | (a) | (b) |
| Cerebrospinal fever | 34 | 3 | 13 | 4 | — | 37 | 10 | 13 | 1 | 1 | | |
| Deaths | | 1 | 2 | | | | 3 | 4 | | | | |
| Diphtheria | 1,874 | 204 | 265 | 58 | 43 | 1,253 | 163 | 238 | 36 | 40 | 1,316 | 224 |
| Deaths | 37 | 4 | 6 | 1 | — | 52 | 5 | 6 | 1 | 2 | | |
| Dysentery | 215 | 50 | 144 | | — | 30 | 10 | 5 | | — | | |
| Deaths | | | | — | — | | | | — | — | | |
| Encephalitis lethargica, acute | 1 | — | 1 | | — | 6 | — | — | | — | | |
| Deaths | | 1 | | | | | 3 | | | | | |
| Enteric (typhoid and paratyphoid) fever | 69 | 2 | 5 | 8 | 1 | 61 | 8 | 4 | 9 | — | 34 | — |
| Deaths | 1 | — | — | — | — | 4 | 1 | — | — | — | | |
| Erysipelas | | | 89 | 12 | 14 | | | 70 | 9 | 7 | | |
| Deaths | | 4 | | | | | 2 | | | | | |
| Infective enteritis or diarrhoea under 2 years | | | | | | | | | | | | |
| Deaths | 68 | 19 | 11 | 8 | 2 | 37 | 13 | 7 | 7 | 4 | | |
| Measles | | | 1,330 | | 798* | | | 41 | | — | | |
| Deaths | 27 | 3 | 17 | 1 | 27 | 3 | — | — | 3 | — | | |
| Ophthalmia neonatorum | 102 | 11 | 38 | | 1 | 78 | 4 | 34 | | — | | |
| Deaths | | | | | | | | | | | | |
| Pneumonia, influenzal § | 1,128 | 78 | 22 | 2 | 23 | 3,140 | 132 | 224 | 127 | 16 | 1,747 | 160 |
| Deaths (from Influenza) | 66 | 8 | 5 | 1 | 2 | 976 | 101 | 135 | 65 | 35 | | |
| Pneumonia, primary | | | 274 | 21 | | | | 318 | 20 | | | |
| Deaths | | 27 | | 21 | 27 | | 21 | | 85 | 28 | | |
| Polio-encephalitis, acute | 1 | — | | | | — | — | | | | | |
| Deaths | | — | | | | | — | | | | | |
| Poliomyelitis, acute | 6 | — | 1 | | — | 3 | — | 2 | | — | | |
| Deaths | | — | | | | | — | | | | | |
| Puerperal fever | 6† | 6 | 16 | 2 | — | 59 | 4 | 20 | 1 | — | | |
| Deaths | | 2‡ | | | | | 1‡ | | | | | |
| Puerperal pyrexia | 204 | 22 | 29 | | 5 | 148 | 12 | 26 | | — | | |
| Deaths | | | | | | | | | | | | |
| Relapsing fever | 1 | — | — | | — | — | — | — | | — | | |
| Deaths | | | | | | | | | | | | |
| Scarlet fever | 2,417 | 168 | 501 | 87 | 88 | 1,666 | 173 | 324 | 57 | 47 | 2,176 | 250 |
| Deaths | 4 | — | 1 | 2 | — | 5 | 1 | — | — | — | | |
| Small-pox | — | — | — | | — | — | — | — | | — | | |
| Deaths | — | — | | — | — | — | — | | — | — | | |
| Typhus fever | — | — | — | — | — | — | — | — | — | — | | |
| Deaths | — | — | | — | — | — | — | | — | — | | |
| Whooping-cough | | | 33 | | 7 | | | 595 | | 8 | | |
| Deaths | 27 | 5 | — | 1 | 2 | 40 | 4 | 32 | 4 | 1 | | |
| Deaths (0-1 year) | 468 | 92 | 91 | 40 | 32 | 467 | 74 | 110 | 56 | 26 | | |
| Infant mortality rate (per 1,000 live births) | 78 | 76 | | | | 74 | 61 | | | | | |
| Deaths (excluding stillbirths) | 5,063 | 1,063 | 730 | 197 | 199 | 7,688 | 1,303 | 1,127 | 473 | 247 | | |
| Annual death rate (per 1,000 persons living) | 12.5 | 13.4 | 13.3 | 13.3 | 17.6 | 19.1 | 16.2 | 21.4 | 32.2 | 23.6 | | |
| Live births | 6,575 | 1,277 | 937 | 408 | 222 | 6,639 | 1,325 | 967 | 365 | 223 | | |
| Annual rate per 1,000 persons living | 16.2 | 16.1 | 19.1 | 27.6 | 19.7 | 16.5 | 16.5 | 19.8 | 24.9 | 21.3 | | |
| Stillbirths | 281 | 29 | | | | 292 | 39 | | | | | |
| Rate per 1,000 total births (including stillborn) | 41 | 22 | | | | 42 | 29 | | | | | |

(i) 122 great towns in 1937.
(ii) 12 " " "
(iii) 9 " " "

* 789 cases in Belfast alone.
† After October 1, 1937, puerperal fever was made notifiable only in the Administrative County of London.

‡ Deaths from puerperal sepsis.
§ Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

## EPIDEMIOLOGICAL NOTES

### Enteric Fever

During the week there have been 4 more cases of typhoid fever in the Somerset outbreak, bringing the total to 39, while an additional death has brought the total deaths to 5. The outbreak has remained confined to the original districts of Highbridge and Huntspill. Although the source of the infection has not been traced, the initial outbreak appears to have come to an end, and the last few cases probably resulted from contact with the primary cases. Of the two cases of typhoid fever notified in London during the week under review, 1 each occurred in the borough of Kensington and the city of Westminster.

### Diphtheria and Scarlet Fever

As pointed out last week the incidences of diphtheria and scarlet fever are appreciably higher this year compared with the corresponding week last year in all five countries. In most of the countries the diseases appeared to be on the increase, but this week there is a drop in the notifications of both diseases for all five countries with the single exception of scarlet fever in Northern Ireland, where 88 cases were notified compared with 84 in the previous week.

### Influenza

Notifications of influenzal pneumonia continue to fall in England and Wales—1,128 compared with 1,302 in the previous week—while for London the figures are 78 and 110 respectively. The increase of 6 deaths in England and Wales is probably attributable to the lag of 7 to 14 days between notification and death.

### Measles and Whooping-cough

During the week under review there were 37 notifications of measles in the London boroughs in which the disease is notifiable, compared with 23 in the previous week. During the same period 1,152 cases were reported from the L.C.C. elementary schools compared with 784 last week and 522 in the previous week, and the average daily measles admissions to the L.C.C. fever hospitals was 39 compared with 32 and 25 in the two previous weeks. On the other hand, the measles epidemic in Scotland appears on the whole to be abating; there have been only 1,330 notifications compared with 1,661 in the previous week, while the deaths remain at 17. The fall in notifications was seen in Edinburgh and Dundee, while in Glasgow the figures have risen from 1,013 to 1,020. The Belfast outbreak has probably reached its peak, the figures for the last three weeks being 832, 728, and 789 respectively. Mortality from whooping-cough appears to be increasing in England and Wales, deaths for the week being 27 for the whole country and 5 for London, compared with 20 and 2 for London in the previous week.

### Acute Poliomyelitis

During the last few months there has been an epidemic of acute poliomyelitis in Victoria, Australia, with 1,695 cases and 88 deaths. The peak of the epidemic has probably been reached. While immune serum continues to be used both in treatment and prophylaxis, there have been no reports so far of the application of chemical substances such as zinc sulphate to the nasal mucous membrane in the hope of averting attack. Sister Kenny's system of treatment of paralysis is being given a thorough trial in the State of Victoria.

# Medical News

The 163rd anniversary dinner of the Medical Society of London will be held at Claridge's on Tuesday, March 1, at 7.45 p.m.

The eighth Sir Robert Jones Lecture will be given by Dr. Frederick C. Kidner, President of the American Orthopaedic Association, on the subject of congenital dislocation of the hip, on February 24, at the Hospital for Joint Diseases, Madison Avenue, New York City.

A meeting of the Lancashire and Cheshire Branch of the British Medical Association will be held at Salford Royal Hospital on Wednesday, February 23, at 4 p.m., when Mr. R. Ollerenshaw and Mr. W. Sayle Creer will speak on "Common Foot Deformities and the Function of the Chiropodist attached to a General Hospital." Further particulars appear in our *Supplement*.

The annual general meeting of members of the Medical Peace Campaign will be held to-day (Saturday, February 19) at Friends House, Euston Road, N.W., at 5 p.m. Dr. Adrian Stephen will take the chair.

A meeting of the Medico-Legal Society will be held at 26, Portland Place, W., on Thursday, February 24, at 8.30 p.m., when a paper will be presented by Dr. Gerald Slot and Mr. B. A. Levinson on "The Status, Scope, and Legal Position of the Unqualified Practitioner."

The Hunterian Oration before the Hunterian Society will be delivered at the Mansion House, E.C., on Monday, February 28, at 9 p.m., by Sir Frederick Hobday, on "John Hunter—Pioneer of Veterinary Science."

A meeting of the West London Medico-Chirurgical Society will be held at West London Hospital, Hammersmith, W., on Friday, March 4, at 8.30 p.m., when Dr. Donald Hunter will speak on "Industrial Diseases."

A medical congress will be held at Tunis on April 11 to 13 under the presidency of Dr. Etienne Burnet, director of the Pasteur Institute of Tunis. The chief subject for discussion will be the aetiology, epidemiology, clinical aspects, prophylaxis, and treatment of trachoma. Further information can be obtained from the general secretary, Maison du Médecin, 25, Avenue de Paris, Tunis.

The Grenfell Association of Great Britain and Ireland has arranged a lantern lecture on medical work in Labrador and North Newfoundland, to be given by Dr. Charles Hogarth Forsyth of Labrador, in the Assembly Hall of the Royal Empire Society, Northumberland Avenue, W.C. (entrance in Craven Street), on Tuesday, February 22, at 3 p.m.

Two £100 scholarships are again being offered at Port Regis Preparatory School to sons of medical men. The examination is being held in March, 1938, and candidates must be under 9 years of age at the time of competing. Applications for the scholarships should be addressed to the Headmaster, Port Regis, Broadstairs, not later than February 20. The school is situated in the healthiest and most bracing position in Broadstairs and Kingsgate-on-Sea, and has an excellent record.

The issue of the *Bulletin de l'Office international d'Hygiène publique* for December, 1937, is devoted to plague, scarlet fever, tularaemia, infectious diseases, and mental disorders.

The issue of *Paris Médical* for January 15, which is devoted to dermatology, contains an interesting but by no means flattering description of the new buildings of the Infirmerie Saint-Lazare used for the treatment of prostitutes suffering from venereal diseases.

Geh. Rat August Bier, emeritus professor of surgery at Berlin University, celebrated the fiftieth anniversary of his qualification on January 30.

Sir Comyns Berkeley has been nominated an honorary member of the German Society for Gynaecology.

# Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

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## QUERIES AND ANSWERS

### Primary Vaccination at the Age of 12

"CHELSEA" writes: Can any reader advise me in regard to the following problem? My son, aged 12, was not vaccinated as an infant, and he is now being entered as a scholarship candidate at one or two public schools. The memorandum published by the Ministry of Health deprecates primary vaccination after the age of 1 year owing to the risk of encephalitis, and I fear that most schools will be closed to him unless he is vaccinated. Have any readers faced this problem with their patients' children? If so, I should like to know how they dealt with the situation.

### Enlarged Foliate Papillae

"D. Y. C." writes: I have had difficulty in treating a case of enlarged foliate papillae in a woman, aged 26, who for the last two years has had attacks of granular pharyngitis, which usually occurs in December or January. There is periodic enlargement of the papillae on one or other side, sometimes on both, accompanied by severe tenderness and dryness; sucking lozenges, for example, aggravates the condition. I have tried painting with Mandl's paint, with argyrol, and with glycerin. I have prescribed various gargles, and have administered tonics containing iron and vitamin preparations. I have also had her teeth seen to, but there are no dentures to cause this condition. I should be grateful for any advice on the subject.

### Fomites et Alia

Professor MILES H. PHILLIPS writes: Of course "Senex" is correct in his condemnation of my misuse of the word "fomites." Actually I had realized the danger and had intended, but forgotten, to throw the responsibility on to Dr. Henry by placing the word in quotation marks. It would be clearer and fairer to use Henry's phrase "contagion of fomites." I am glad of this opportunity to correct two other mistakes. In my desire to confine my lecture within a time limit I discarded a sentence stating that "my own attention was first forcibly directed to this danger of spray infection by the Scottish Board of Health Report on Maternal Mortality in Aberdeen by Parlane Kinloch, J. Smith, and J. A. Stephen (Edinburgh, 1928), and, later, by the further investigations and papers of J. Smith" (*J. Obstet. Gynaec. Brit. Emp.*, 1933, **40**, 991). Colebrook in his book drew special attention to the work of J. Smith of Aberdeen. I now realize that I thus came to omit the name of one of the most convincing of the pioneers in this special quest. However, I cannot explain the blunder I made in referring to Professor DeLee as Benjamin instead of Joseph B., but I can ask for his forgiveness.

### Herpes and Varicella

Dr. E. R. HARGREAVES (East Keswick, near Leeds) writes: The close association of varicella and herpes zoster is well known, but it is impossible to exclude other sources of infection. In this respect the following case is perhaps worthy of record. On December 3, 1937, I was called to see a governess employed at an old manor house in the depths of the country; she was suffering from a very mild attack of right-sided cervical herpes zoster. Eleven days later I visited the youngest son of the house, a boy of 15, who had contracted chicken-pox. This boy, who had been "backward" since birth, had his own rooms at the back of the house, his education being in the hands of the governess. Apart from daily walks in the surrounding park, the boy had not been out of his rooms during the month preceding his illness. So far as I am aware there has been no case of chicken-pox in the district for over a year.

### Sterilization of Catheters

Dr. C. L. L. MURRAY (Box 322, Murraysburg, South Africa) writes: Some time ago I came across a prescription for a special non-corrosive solution for keeping rubber and metal catheters constantly sterile. Would anyone who knows this prescription kindly communicate with me?

## LETTERS, NOTES, ETC.

### Strength of Intravenous Saline Infusion

Dr. W. KERR RUSSELL (London) writes: As the number of doctors who are becoming interested in artificial fever treatment is greatly increasing I think it may be helpful to draw the attention of readers to a small error which appeared in the reprint of a very interesting article on fever therapy by Drs. P. S. Hench, C. H. Slocumb, and W. C. Popp of the Mayo Clinic in the *Journal of the American Medical Association*, pp. 1779–90. On page 25 of the reprint there is a typographical error. In mentioning that in about 3 per cent. of cases having hyperpyrexia treatment there are protracted anorexia, nausea, and frequent vomiting for a period lasting from twenty-four to forty-eight hours, they say that "the condition can be promptly overcome by the intravenous administration of from 500 to 1,000 c.cm. of 10 per cent. dextrose and 10 per cent. saline solution." This latter amount is incorrectly reprinted, and should read 1 per cent. saline solution. Though this article was published as long ago as May 18, 1935, it is still very frequently referred to and quoted.

### Slough Social Centre

Dr. F. M. DAY (assistant county medical officer of health and medical officer attending the Slough Social Infant Welfare Centre) writes: In your issue of January 29 (p. 246), in an article dealing with Slough Social Centre, a statement is made that 150 children are seen weekly at the infant welfare centre by the visiting doctor. I should like to point out that this number attend the Centre weekly and that any of them may see the doctor, but that the number actually brought to him does not exceed fifty children a week.

### The Bart's Journal

We welcome the enterprise shown by *St. Bartholomew's Hospital Journal* in persuading Mr. Eric Gill to engrave a design for the cover. The picture of Rahere healing the sick has a truly mediaeval effect, and recalls the antiquity of the hospital. Many Bart's men will be surprised to learn that Marcus was the Christian name of their founder, and will ask why Sir Norman Moore and Sir D'Arcy Power did not know it. The design on the cover is apparently but an introduction to further changes in format, and it is announced in the February issue that the letterpress will next month be printed in Baskerville type.

### South African Sound Films

A programme of South African sound films is being privately displayed in the Cinema Hall at South Africa House. Among other items the programme includes films of the Zimbabwe Ruins, the Mountain Waters of Natal, and the aerial journey from Johannesburg to Cape Town. Application for admittance, which is free, should be made to the High Commissioner for the Union of South Africa, South Africa House, Trafalgar Square, London, W.C.2.